

Michigan Entrepreneurship Education Network (MEEN)

Entrepreneurship Education Benchmarking and Template Report

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INTRODUCTION

The intent of the *Entrepreneurship Education Benchmarking and Template Report* is to describe and discuss national benchmarking of “best practices” for Entrepreneurship programs in Schools of Business, Engineering, and Medicine, and to provide more detailed information on the development of various components of Entrepreneurship Education programs. In some cases, benchmarked programs are joint, with collaborations across two or several schools. This Report is intended to address broad benchmarking of programs, and to describe specifics of these programs’ entrepreneurship curriculum and course descriptions. It is expected to be useful as a frame of reference for Entrepreneurship program planning and development for Michigan universities. The Report is meant to be illustrative of the best information on entrepreneurship, and with links to additional information, yet not to be exhaustive. Schools undertaking comprehensive Entrepreneurship education planning processes should be aware of the wide availability of benchmarking information on the web, only some of which is referenced or linked to here, that should be used to supplement this Report. *Please note that the majority of this information is from the Universities’ websites; the accuracy of the information was not independently verified.*

This Report constitutes the first two of the main goals of the Michigan Entrepreneurship Education Network (MEEN), described below. An earlier version of this report was disseminated in June, 2003. This updated version, which includes benchmarking information on all public universities in the state of Michigan, will be disseminated early in 2004.

Presentation and discussion of the materials presented in this Report occurred at the MEEN Entrepreneurship Educators’ Workshop, Facilitating Entrepreneurship Programs Now and In the Future, held on November 13-14, 2003 in Ann Arbor. The workshop program, speaker information, and the papers given are available at the MEEN website, currently hosted by the University of Michigan Zell Lurie Institute (http://www.zli.bus.umich.edu/events_programs/).

MICHIGAN ENTREPRENEURSHIP EDUCATION NETWORK (MEEN) OVERVIEW

Purpose and Goals

The Michigan Entrepreneurship Education Network (MEEN), launched in September 2002, is a program supported by the Michigan Economic Development Corporation (MEDC), and sponsored by the University of Michigan Business School’s Samuel Zell & Robert H. Lurie Institute for Entrepreneurial Studies. MEEN is dedicated to the development and strengthening of entrepreneurship education programs in Michigan’s traditional degree-granting public universities. The intent is to create a partnership with all of Michigan’s universities to help build their success and reputation in entrepreneurial education, and, in turn, to enhance the reputation of the state for entrepreneurial education. The MEEN concept evolved from the MEDC’s strategic plan, which emphasizes the increasingly important role universities play in Michigan’s future economic development efforts.

The main goals of MEEN are to:

- Develop a Benchmarking Report – titled *Entrepreneurship Education Benchmarking Report* – based on national benchmarking of “best practices,” and to disseminate the report to Michigan universities as a reference for Entrepreneurship program planning
- Create a template of a comprehensive entrepreneurial education program – titled *Entrepreneurship Education Template Report* – describing in detail information relevant to the launch and/or enhancement of an Entrepreneurship program. Information provided will include, for example, funding sources, professional organizations and conferences, unique courses and course content, internships, competitions, incubation relationships,

and support services. This Template will be tailored to the unique needs of Michigan's universities and will reflect the Benchmarking Report

- Understand the robustness of current entrepreneurship education programs in Michigan's universities with reference to the template. Identify opportunities for enhancing the programs in ways that fit with the mission and goals of each university. Inclusion of all appropriate schools and disciplines within each university (e.g., Business, Engineering, Natural Sciences, Information Sciences, and Medicine) is encouraged
- Provide recommendations, materials, and assistance to Michigan universities to develop their entrepreneurship education programs
- Provide grant funding, on a competitive basis, to support program creation and implementation through the University Entrepreneurship Program Development Fund (UEPDF). Online access to fund applications is available on the MEDC website at <http://medc.michigan.org/InfoTech/news/combo.asp?ContentId=3B8B84CD-4E79-4549-8992-846EF2FC8349>
- Provide information about and access to other grant funding sources for long-term entrepreneurship education program development
- Create an enduring, collaborative network of entrepreneurship education programs in Michigan's universities, called the Michigan Entrepreneurship Education Network (MEEN). Champions from each university, representing its broad entrepreneurship education interests, will be invited to participate
- Develop enduring partnership and integration between MEEN and other entrepreneurship initiatives, particularly Michigan's Smart Zones

Given the MEDC's focus on commercialization and economic development, and its emphasis on high technology industry sectors, entrepreneurship that fosters technology commercialization is emphasized in this Report. In particular, a common theme throughout is the facilitation of commercialization of high potential, technology-based start-ups or early stage firms. University developed technologies are also a high priority. Examples of university units from which technologies are expected to arise are: Engineering (Mechanical, Chemical, Electrical, and Computer Science), Medical Schools, and Natural Sciences (Chemistry, Agriculture, and others). Consistent with MEDC's focus, these technologies are expected to apply to a variety of industries of central interest. Prominent among these are: Life Sciences, Environmental Sciences, Advanced Manufacturing, Homeland Security, and IT.

While the technology emphasis is important, universities that do not include research and development of technology among their primary goals will also find the materials contained in this report to be highly relevant and useful for two reasons. First, much university-based entrepreneurial activity is based on either technologies developed outside the university (i.e., developed within the external, generally local, community), or is not technology-based at all (i.e., service businesses). Second, the Report contains benchmarking information on non-research universities, universities within a broad range of sizes, residential and non-residential universities, and universities from a broad U.S.-based geographic area. Outstanding and exemplary entrepreneurship programs are found in all shapes and sizes. To illustrate the substantial variety found in entrepreneurship programs, a large number of Entrepreneurship career themes emerged: Family Business, Women Owned Businesses, Retail, and Turnaround Management to name a few.

IMPORTANCE OF ENTREPRENEURSHIP EDUCATION

The importance of entrepreneurship education in the nation's universities and colleges has become well accepted. A study titled "Impact of Entrepreneurship Education" (Kauffman Foundation, Insight Series) cites compelling statistics on the growth and prevalence of such programs. It reports that while 15 years ago very few universities had entrepreneurship education, today more than 1,500 colleges and universities offer some form of it. Further, there are more than 100 active university-based entrepreneurship centers in the U.S., and more than 270 endowed positions in entrepreneurship, an increase of 150 percent in the past five years.

Based on an analysis of the Berger Entrepreneurship Program at the University of Arizona done as part of the Kauffman study, the impact of entrepreneurial education on students is also impressive. Students in the Berger Entrepreneurship Program:

- Were more likely to be involved in new ventures (25% higher)
- Were more likely to own their own businesses after graduation (11% higher)
- Realized five times the growth in sales and employment in their companies or their employer's companies
- Earned more than non-entrepreneurship graduates (roughly 27% higher)
- Were more likely to be involved in new technological product development (9% higher)
- Were more likely to be employed by a high tech firm (13% higher)

The study also found that entrepreneurship programs assist in the transfer of technology from the university. Further, deans and department heads at the University of Arizona report increases in external funding attracted to entrepreneurial programs, and pedagogical innovations in entrepreneurship curriculum have improved curriculum in other business disciplines.

Joe Bordogna from the National Science Foundation (NSF) offers an interesting perspective on the role of entrepreneurship education in relation to the United State's creativity and economic growth. He comments that NSF's vision is to enable the nation's future through discovery and innovation. To achieve this, the NSF invests in: intellectual capital; the integration of research and education; and the promotion of partnerships among universities, industry, local schools, and other partners. He points out that entrepreneurship is critical to achieving this goal as it promotes innovation, rule breaking, and risk management. He states that innovation is the heart and bones of our economic system as it drives change and alters the fabric of our society, and that creative disruption of conventional thinking is a normal state in a healthy society. High rates of growth and innovation are attainable mainly through entrepreneurship; these goals are very difficult for large, mature firms to achieve.

Importance of University-wide Entrepreneurship Programs

Entrepreneurship education, by its very nature, is boundary-spanning and integrative across the university's schools and disciplines; as such, it creates the opportunity for strong collaborative linkages among university units. Entrepreneurship should not be thought of as the role and responsibility of only the Business Schools. NSF's Joe Bordogna considers entrepreneurship as ideally a partnership to synthesize the "Big 5," as follows:

- Science – analysis, reduction, discovery, new knowledge
- Engineering – synthesis, integration, design
- Economics/Business – capital formation, marketplace, skilled workforce
- Policy – societal needs, natural capacity
- Technology – ideas, information, infrastructure, devices, processes, systems

Entrepreneurship programs can thus create a university-wide entrepreneurial community and network, including strong linkages between the Business School experts and the range of university ideas/technologies. At the same time, such collaborations support critical role specialization. The university's scientists can remain immersed in their primary professional roles

of basic and applied research, teaching, and university service. At the same time, the Business School creates input and momentum to move ideas/technologies into the commercial domain. Such collaborations are academically rigorous as they integrate scientific and technological disciplines with multiple business school disciplines – strategy, management, marketing, and finance (venture capital).

Such cross-discipline collaborations are often productive in facilitating joint technology development and commercialization, at times leading to the development of start-ups. Fostering start-ups can have substantial benefits:

- *Faculty Retention.* The opportunity to create a start-up facilitates the retention throughout the university of key faculty members who have entrepreneurial talent and ambition. As faculty see the fruition of their research efforts in application and commercialization, often with commensurate earnings and ownership opportunities as their reward, they deem leaving the university to achieve these goals as unnecessary.
- *Economic Impact.* Academic research has led to the launch of hundreds of start-ups, with high economic impact (new companies, new jobs and new streams of income), often in the state of origin. At least 454 new U.S. and Canadian companies based on academic research formed in fiscal year 2000, according to the "Association of University Technology Managers (AUTM) Licensing Survey: FY 2000." (To purchase the survey or a summary: <http://www.autm.net/store/survey/regnotice.cfm>.) Of those firms, 80 percent continued to operate in the state or province in which the technology was created.
- *University Financial Impact.* Start-ups have financial benefits to the University. The AUTM 2000 survey also found that starting up businesses is paying off for higher education. Of the institutions surveyed, 56 percent held equity interests in companies formed in 2000. The institutions' adjusted gross license income received from licenses and options was \$1.26 billion.

BUSINESS SCHOOL ENTREPRENEURSHIP PROGRAMS

Importance of Business Schools in University-wide Entrepreneurship Programs

Entrepreneurship programs and courses are now widely valued as an essential component to a comprehensive Business School curriculum. Further, Business Schools play a critical role in University-wide Entrepreneurship Programs. Specific roles are the following:

- *Assistance to the University's Office of Intellectual Property (OIP) on technology assessments.* With faculty oversight, business students can review technology areas of the university's focus (e.g., its areas of patenting and licensing activity) for assessment of areas with high potential commercial application. Students can recommend priority areas for commercialization efforts, and optimum methods of commercialization (e.g., licensing, start-up).
- *Assistance to Faculty with Commercialization Ideas.* Business students can conduct analyses prior to a company launch in support of the go/no-go start-up decision. Such assistance could include: market and feasibility analysis on specific technology opportunities, business plan development, and creation of a venture capital "pitch". This involvement can often occur within the context of class-based projects.
- *Provide Start-up and Ongoing Management.* Business school students can be ideal as initial managers of university-based start-ups. Such opportunities provide very valuable experience for entrepreneurial students, particularly if they have been involved in the opportunity while a student. Internship programs are particularly useful as a method of matching entrepreneurial students with management needs of start-ups. This arrangement is often ideal for the faculty member who benefits from an enthusiastic and high-energy manager who complements his/her scientific/technological expertise.
- *Create "Entrepreneurial Community".* Creating a campus-wide community occurs through a variety of methods: educational workshops and networking events, speaker series, business plan competitions, and other educational opportunities that integrate across Schools.

Components of a Comprehensive Business Entrepreneurship Program

There are a large number of formal, comprehensive entrepreneurship programs in the United States. Based on the program benchmarks discussed in the following section, a comprehensive list of entrepreneurship program components is described here. As programs develop in idiosyncratic ways based on the experiences and values of the key participants – donors, faculty, administrators, and students – no attempt was made to establish priorities among these components.

- *Formal Structure: Institute or Center.* The strongest entrepreneurship programs have an officially designated Institute or Center structure, signaling the School's entrepreneurship vision and commitment. Many programs have secured independent funding from private donors and other grant sources, with endowment funding protecting long-term programmatic commitments. Entrepreneurship is a concept that often attracts funding.
- *Leadership.* Entrepreneurship Institutes/Centers/Programs usually designate a formal Director. This individual might be an academic with Ph.D. training, and might or might not have achieved tenure. Alternatively, some programs prefer to hire an MBA with extensive management, start-up, and/or venture capital experience.
- *Oversight.* Many programs have an external *Advisory Board*, made up of successful entrepreneurs, venture capitalists, and community leaders. The Board provides guidance and feedback, and also is critical for fund raising. Some programs also have an internal

Executive Committee comprised of entrepreneurship faculty and interested administrators. The committee provides operational guidance and oversight.

- *Faculty Research.* Entrepreneurship programs vary widely on the extent to which they emphasize research, and the extent to which research is formal (peer-reviewed empirical studies) or application-oriented and case-based. While Ph.D. programs in Entrepreneurship are now producing entrepreneurship-trained faculty, entrepreneurship is generally not considered a formal research discipline. Often, entrepreneurship faculty will publish with a dual orientation from both their primary discipline – usually Strategy, Management, Marketing, and Finance – with entrepreneurship as the application focus or context of their work.
- *Curriculum.* Entrepreneurship programs vary widely on the breadth and depth of their curriculum. An overarching theme for most programs, however, is the stages of venture development as an organizing framework for curriculum development. These stages can be generally conceptualized as consisting of these five (refer to following Benchmark section for course examples):
 - Identification and Development of Ideas/Technologies
 - Assessment and Development of Commercial Viability
 - Strategic and Business Planning
 - Start-up: financing, space, management recruitment, etc.
 - Management and Early-stage Growth (years 1-5)
- *Pedagogical Methods.* Entrepreneurship education is, by its nature, very applied and hands-on. As such, a variety of pedagogical methods are common, including:
 - Standard classroom lecture and exam format
 - Project-based, within flexible classroom format
 - Immersive, team-based project with on-site emphasis: constitutes the entire class context, often lasting entire semester; often intended to create significant progress in the development of a start-up
 - Independent Study (topic or opportunity-based)
- *Career Themes.* Many programs will focus course work around themes that relate directly to specific career opportunities within the broader entrepreneurship domain. The common themes are the following:
 - Venture Capital
 - Family Business
 - Franchise
 - Women-Owned Business
 - Technology/Industry/Application specialization, e.g.:
 - Information Systems
 - Life Sciences/Biotechnology
 - E-Commerce
 - Corporate Entrepreneurship
 - Social Entrepreneurship
 - Spin-Outs/Turnarounds/Acquisitions
 - Environmental Entrepreneurship
 - Global/Emerging Economy Entrepreneurship
 - Real Estate
 - Urban and Minority Entrepreneurship
- *Internship Program.* Many programs have formal internship programs, often funded by external sources, involving structured assignments with faculty oversight. Often the internship will result in academic credit for the student, or a salary stipend.

- *Networking Events.* Programs often have regularly scheduled events for educational and networking purposes. The audience often extends beyond the Business School community to the other University Schools, alumni networks, and the professional business community. These events often are in the form of a seminar/speaker series and formal or informal mentoring programs. Some programs have a major annual (or twice annually) event, often inviting speakers of high profile in the entrepreneurship community. Entrepreneurship student clubs are often centrally involved in such events.
- *Student Clubs.* Clubs often have one of three types of focus: Entrepreneurship, Venture Capital, and Technology. Coordination among the clubs is sometimes achieved.
- *Consulting Program.* Intended to connect students with relevant educational experiences and possible post-graduation employment opportunities, some entrepreneurship programs coordinate the availability of students to consult to start-ups. This is done either on a paid basis or for academic credit.
- *Career Placement.* Some programs make a specific effort to attract entrepreneurial firms for recruiting and involvement at career fairs. These programs often attempt to link with firms that have been involved with the students through class projects, internships, and consulting clients.
- *Venture Fund.* An unusual program, yet one that is highly popular with students, is a student-run venture fund. The most developed program is the University of Michigan Business School's Wolverine Venture Fund (see discussion in Benchmarking section below). With oversight by a Board of professional venture capitalists, the students are involved in all aspects of venture capital investing, including analysis, due diligence, decision input, and portfolio tracking. Such a program is very time-intensive for the faculty, and requires external funding expressly for the purpose of venture investing.
- *Scholarships/Fellowships.* Some programs provide scholarships for outstanding academic students with demonstrated strong entrepreneurial interest and experience. Fellowships are also available, often involving post-graduation placement for an in-depth experience. Often, early-stage firms with highly promising opportunity can be found to sponsor fellowships as they benefit from the involvement of a talented graduate at low or now cost. External funding for scholarships and fellowships is generally required.
- *Outreach.* Entrepreneurship programs are often coordinated with, and at times serve as a physical location for, organizations with missions of assisting small businesses. For example, Small Business Development Centers (SBDC) often affiliate and co-locate with Entrepreneurship programs. They can also sponsor speakers from, and serve as an information repository for, such professional organizations as the National Business Incubator's Association (NBIA), Association of University Research Parks (AURP), and the Kauffman Foundation.

Representative Business School Entrepreneurship Course Curriculum

The following is a list of the entrepreneurship courses that are most often offered within Business School Entrepreneurship programs. While these could be considered to comprise the foundation of an entrepreneurship curriculum, these courses are not always offered in all programs. Depending on the particular focus of the entrepreneurship program, a variety of other entrepreneurship courses could be offered instead of or in addition to this representative list.

For each course, a sample description is included. Please note that individual programs vary on the specific structure and content of such courses, and these descriptions are intended to be only illustrative. Refer to Appendix C for descriptions of similar courses offered by the benchmarked programs, including links to syllabi when available.

- *Introduction to Entrepreneurship.* Provides an overview of the entrepreneurial process, focusing on all aspects of starting a new business. Topics include: attributes of entrepreneurs and entrepreneurial careers, recognizing and evaluating entrepreneurial opportunities, the steps and competencies required to launch a successful new venture, stages of growth of entrepreneurial ventures, the politics and cultures of new ventures, and basic concepts of financing the venture. Students are challenged to consider the appropriateness of an entrepreneurial career for themselves.
- *Feasibility Analysis and Business Plan Development.* Focuses on the techniques used to create and evaluate new concepts and new business opportunities, leading to the development of a business plan to launch the business concept. Students study the process of Feasibility Analysis of business ventures from the time of the generation of the concept through critical concept analysis, opportunity screening and pre-feasibility analysis. This is followed by the development of the full business plan. Examines the business plan; what it contains; what is included in specific sections; how it is developed and written; what are its uses; whether different versions are acceptable; how to analyze and evaluate the business plan; and what investors look for in a business plan.
- *Entrepreneurial Finance.* Focuses on raising seed and growth capital from a variety of sources of capital: venture capital, business angels, investment banking, and commercial banking sources. Discusses financial problems unique to the small- and medium-sized firm undergoing rapid growth. Examines actual proposals made to venture capital firms, particularly in terms of their financial viability and elements of structuring the deal. Examines financial management for entrepreneurs over the life of a business. Includes financing start-ups, going public, selling out, bankruptcy, and other related topics.
- *Technology-Based Venture Growth Strategies.* Focuses on the strategic challenges of entrepreneurial companies, with particular emphasis on product/market strategies that optimize the venture's unique competitive advantage. Outlines tools for formulating and evaluating technology strategy in entrepreneurial start-ups, including an introduction to models of technological evolution, models of new-firm strategy development, and models of organizational dynamics and innovation. Topics covered include: making money from innovation; competition between technologies; strategies for competing against established incumbents; organization of R&D; technology portfolio development; and theories of diffusion and adoption. Explores the key managerial issues that entrepreneurial companies face in their decision to pursue opportunities.
- *Managing a Growing Business.* Designed for students who want to manage growing companies that have survived beyond the initial launch period. To build a high-growth, sustainable firm, an entrepreneur must know how to locate and recruit talented people as well as manage and retain them. Focuses on building, running, and growing an organization. Examines three central themes: how to think analytically about designing organizational systems; how leaders, especially founders, play a critical role in shaping an organization's culture; and how to build a successful organization for the long term. Discusses the need for increasing professionalism and formalization, while still maintaining the entrepreneurial spirit that brought the company to its current growth position. Discusses problems unique to businesses at this stage of development. Also relevant for those who want to manage within larger companies while emphasizing innovation, intrapreneurship, and the management of opportunities.

Business School Entrepreneurship Program Benchmarks

Business School Entrepreneurship Programs are widely benchmarked and ranked. This section is intended to give an overview of representative top tier and regional entrepreneurship programs, and to provide information on and links to additional programs of potential interest that are not discussed in detail. *A later version of this report, scheduled for late Fall 2003, will include benchmarking information for all Michigan public university entrepreneurship programs.*

The benchmarking information is provided in three sections. The first details the top ten programs, as ranked by U.S. News and World Report, as illustration of the range of programs and their content within comprehensive programs of the top tier entrepreneurship universities. These appear in their rank order. Refer to *Appendix A* for a list of the top 27. The second section profiles five universities that more closely reflect the regional profile of many of Michigan's business entrepreneurship programs, or that have programs of particular interest. These appear alphabetically. A useful reference to university programs of this type is found in *Appendix B*, which contains a list of National Consortium of Entrepreneurship Centers (NCEC) members. As indicated, a third section will be added in the future to include all Michigan entrepreneurship programs.

Refer to *Appendix C* for curriculum and course descriptions for all universities described in this section.

The section on Business School Entrepreneurship Program Benchmarks includes the following:

- A. Top 10 Entrepreneurship Programs in 2002, U.S. News and World Report
- B. Distinctive Regional University Entrepreneurship Programs
- C. Michigan Public University Entrepreneurship Programs

A. Top 10 Entrepreneurship Programs in 2002, U.S. News and World Report

The following ten top entrepreneurship programs – as ranked by U.S. News and World Report in 2002 – are profiled below:

- Babson College – F.W. Olin Graduate School of Business (#1)
- Stanford University – Graduate School of Business (#2)
- University of Pennsylvania – Wharton School (#3)
- Harvard University – Harvard Business School (#4)
- University of Southern California (#5)
- Massachusetts Institute of Technology (#6)
- University of Texas – Austin (#7)
- University of California – Los Angeles (#8)
- Columbia University (#9)
- University of California – Berkeley (#10)

Babson College – F.W. Olin Graduate School of Business (#1)

<http://www2.babson.edu/babson/babsoneshipp.nsf/public/homepage>

- **Entrepreneurship Education Overview:** Babson College in Wellesley, Mass., is recognized internationally as a leader in entrepreneurial management education. It has been a pioneer in entrepreneurial education since its inception in 1919, offering an extensive entrepreneurship curriculum at both the undergraduate and graduate level of study. Babson grants BS degrees through its innovative Undergraduate Program, (recipient of the 2002 Theodore M. Hesburgh Award). It grants MBA and custom MS and MBA degrees through the F.W. Olin Graduate School of Business (currently celebrating 50 years of Babson MBAs). In 1993, the F.W. Olin Graduate School of Business at Babson College made a school-wide commitment to entrepreneurship as the epicenter of its pedagogy with the adoption of a holistic and fully integrated core curriculum for full-time students. The program traces the new venture creation cycle and introduces traditional business principles entirely within the context of entrepreneurial thought. From the first day of the program, an entrepreneurial perspective of creativity, innovation, holistic problem solving, and opportunity recognition has been implicitly and explicitly integrated into all courses. Babson College houses its entrepreneurial activities in the **Arthur M. Blank Center for Entrepreneurship**. Babson School of Executive Education offers executive development programs to experienced managers worldwide. Babson Interactive LLC develops distance learning programs and business simulations for executives and graduate students.
- **Entrepreneurship Activities**
 - The Blank Center sponsors a large number of programs and events at Babson College to foster the entrepreneurial spirit at Babson, and help promising business plans secure venture capital. They offer educational "clash-room" experiences to students, and offer alumni and members of the extended Babson community an opportunity to interact in a productive and exciting manner. Examples include:
 - *The Arthur M. Blank Speaker Series* offers students and members of the broader Babson community exposure to high caliber entrepreneurs. The speaker series traditionally associated with the Babson Entrepreneurial Exchange (BEE) brings 2 to 4 high profile speakers annually to campus for both large group and focused interactions.
 - *Business Plan Competitions*
 - The Douglass Foundation Graduate Business Plan Competition. The Donald Douglass Foundation, established in 1987, sponsors similar awards at selected colleges and universities around the United States. The prizes are awarded to the graduate individual or team that submits the most feasible business plan in any of the following areas: start-ups, acquisitions, company growth, real estate development, and intrapreneurship. A panel of judges consisting of entrepreneurs, venture capitalists, and local business people evaluates the business plans and finalists' presentations.
 - The John H. Muller Jr. Business Plan Prize Competition awards \$5,000 to the Babson undergraduate individual or team that develops the best business plan for an entrepreneurial venture. The Muller Prize was established in 1997 through the generosity of former Babson President William F. Glavin and Mrs. Glavin. It honors the entrepreneurial accomplishments of John H. Muller Jr. P'79, H'96, founder and former chairman of General Housewares Corporation and chairman of the Babson College Board of Trustees from 1989 to 1997.

- *Rocket Pitch Event.* Each November, this event invites Babson entrepreneurs to pitch their company or concept in 3 minutes or less to a large audience of students, faculty, entrepreneurs, investors, and service providers. This forces the entrepreneur to focus on his/her opportunity, and to quickly and succinctly deliver the critical differentiating elements of the business idea. The event also provides an excellent opportunity to meet and network with a large group of quality entrepreneurs, investors, and service providers. Involving the extended Babson entrepreneurial community early in the development process of these business opportunities can provide important feedback and advice to each entrepreneur.
- *Founder's Day/Annual Entrepreneurial Celebration.* Acknowledging the significant achievements of world-class entrepreneurs, this program brings entrepreneurship luminaries to campus to share their experiences and provide inspiration to the Babson community. An internal panel at Babson searches the globe for entrepreneurs who are market leaders and paradigm shifters, and whose businesses have significant and rapidly increasing revenue. The entrepreneurs honored on Founder's Day have created or capitalized on opportunities and developed businesses with dramatic impact.

Stanford University – Graduate School of Business (#2)

<http://www.gsb.stanford.edu/ces/>

- **Entrepreneurship Education Overview:** Building on a half-century tradition of entrepreneurship at the Stanford Graduate School of Business, the **Center for Entrepreneurial Studies (CES)** was founded in 1996 to address the need for greater understanding of the issues faced by entrepreneurial individuals and companies. The Center focuses on case development, research, curriculum development, and student programs in the areas of entrepreneurship and venture capital, as well as supporting alumni and students engaged in entrepreneurial pursuits. The Center's goals are:
 - Encourage rigorous, relevant research on entrepreneurial companies
 - Graduate well-trained, entrepreneurial thinkers
 - Offer a higher probability of success for those embarking on entrepreneurial ventures
 - Lead partnerships between Stanford Business School and the Stanford Entrepreneurship Network (SEN)
- **Entrepreneurship Activities**
 - *Stanford Entrepreneurial Network (SEN).* Entrepreneurial efforts across Stanford campus are coordinated through SEN. It includes members from the Business School's Center for Entrepreneurial Studies, Stanford Technology Ventures Program in the Engineering School, the Office of Technology Licensing, the Silicon Valley Networks Project, the Law School, BASES (the Business Association of Stanford Engineering Students), and the Stanford Office of Corporate Relations. The mission is to support entrepreneurship teaching, research, and collaboration campus-wide, providing one point of contact for all entrepreneurship-related activities, resources, and networking opportunities on campus.
 - *Research / Cases.* The CES encourages rigorous, relevant entrepreneurship research by providing financial support as well as a full-time PhD research associate to faculty working on such projects. Scholars examine issues related to entrepreneurship from a variety of disciplinary perspectives. These projects have produced dozens of research papers, many of which have been published in well-known academic journals.

- *Resources.* The CES maintains a collection of resources relevant to entrepreneurship including books, magazines, reference digests, videos of past events, speaker transcripts, information on local community resources, and background literature on angel financing, search funds, and business planning. The Center also provides reprints of recent articles and other literature, which are available in the office. In addition, the Jackson Library offers computers for online access to the Internet, venture capital databases, company information, etc. Some of these services have restricted access.
- *Entrepreneurial Summer Program (ESP).* The Center for Entrepreneurial Studies offers supplementary funding to selected Stanford first-year MBA students who find summer employment with an entrepreneurial company that cannot pay "average" wages. The intention of the program is to allow students to experience an entrepreneurial summer with an operational company that they might otherwise not be able to have. Only first-year students or returning dual degree students at the Stanford GSB are eligible for this internship.
- *Entrepreneurial Resource Database (ERDB).* The ERDB is designed to connect mentors, investors, and service providers with entrepreneurs from the entire Stanford community. Additionally, it provides for aspiring entrepreneurs from the student and alumni community to connect with one another. Anyone from the community may request an account and enter their profile as a service provider or investor. The database is set up to collect specific information about the type of services provided as well as industry specialty. An investor may indicate a preference for the CES to serve as an intermediary to screen requests for funding. Additionally, they solicit recommendations and feedback from the GSB community on service providers and investors and that information is available on search results. Individuals who wish to have full access to the database must either be current students or alumni of the Stanford Graduate School of Business.
- *Field Projects Database.* GSB students complete projects with outside organizations and entrepreneurs to fulfill course requirements, as independent studies, or for personal interest and experience. This database allows organizations looking for help to submit proposals and for students and faculty to search for projects that will provide challenging learning experiences.
- *Events.* The Center hosts and co-hosts a variety of events on topics relevant to entrepreneurship, including venture capital, equity compensation, and search funds. Some of the events are specifically for students or alumni and others are open to the public.

University of Pennsylvania – Wharton School (#3)

<http://www.wharton.upenn.edu/whartonnow/entrepreneurship.html>

- **Entrepreneurship Education Overview:** In 1973, The Wharton School became the first school to develop a fully integrated curriculum of entrepreneurial studies. Today Wharton, through Wharton Entrepreneurial Programs, supports and seeds innovation and entrepreneurship globally through teaching, research and outreach to a range of organizations through its many programs, initiatives and research centers. At the same time, Wharton students and alumni are helping to build entrepreneurial enterprises around the world and impacting virtually every industry. Endowed in 1997, the **Goergen Entrepreneurial Management Program** is one of the largest and most diverse academic programs of its kind in the world. More than 2,000 students and entrepreneurs participate in courses each year led by both standing faculty and successful current or

former business owners. The program is based on the leading research conducted by Wharton faculty and is distinguished by its ability to combine theory with practice, allowing students to gain access and insight from the entrepreneurial business community.

- **Entrepreneurship Activities**

- *Research – Sol C. Snider Entrepreneurial Research Center.* The home of research for Wharton Entrepreneurial Programs, the Sol C. Snider Entrepreneurial Research Center is the first center dedicated to the study of entrepreneurship. Working around the world to advance understanding of entrepreneurship and global wealth creation, Wharton researchers continually produce top quality studies of entrepreneurship. The Center is also co-home to *The Journal of Business Venturing*, the most influential publication in the field. Current research is focused on a range of topics such as large-scale job creation, productivity and international competitiveness.
- *Internship Program (Wharton Entrepreneurship Internship – WEI).* For students interested in combining a summer internship with a course focused on the real-time issues that surround emerging technology firms, Wharton's WEI offers a unique chance to turn theory into practice. Once enrolled in the program, WEI participants access a secured course site that will serve as their primary communications hub for course assignments, readings, and online discussions and interaction. The WEI is a regular .5 credit unit course offered by the Management Department and sponsored by the Goergen Entrepreneurial Management Program.
- *The Wharton Business Plan Competition (WBPC).* This competition is part of the Wharton Entrepreneurial Programs and was initiated in 1998. The mission of the competition is: "To involve University of Pennsylvania students in the entrepreneurial process and to foster an environment that promotes the creation of new ventures." The competition complements entrepreneurial courses at the Wharton School and the wealth of knowledge and expertise available at the University by giving students access to: 1) more resources; 2) start-up financial capital; 3) mentorship from business advisors and seasoned entrepreneurs; 4) greater coordination of the many entrepreneurial resources available on campus and in the Philadelphia area.
- *Wharton Venture Initiation Program (VIP) "From Concept to Capital."* The VIP is a business incubator for companies that are owned and operated by students and recent graduates of the University of Pennsylvania. The aim is to foster a series of Penn student businesses that are honed for success: well developed, polished, and professionally nurtured; in other words, 'Venture Ready'. Managed and operated by the **Wharton Small Business Development Center (WSBDC)**, the VIP provides client companies with the entrepreneurial management education, support, and physical facilities that are essential for starting a new business. VIP services are given without cost or loss of equity to the participating student teams.
- *Enterprising Families Network.* To provide enterprising families worldwide with the knowledge and skills they need to fulfill their vision for trans-generational entrepreneurship and wealth acceleration. It has a Four-Fold Approach for Applying Entrepreneurial Strategy To Enterprising Families:
 - *Venture Network:* A membership-based global network of families providing family-to-family interactions, seminars, strategy-exchange workshops, and business development.

- *Research Network*: A multi-disciplinary academic and applied research network for knowledge generation, benchmarking, and publishing.
 - *Wharton Courses*: Graduate and undergraduate courses on strategies and practices for managing family companies.
 - *Global Outreach*: Customized seminars and networking events with joint venture partners worldwide.
- *The Wharton Small Business Development Center (SBDC)*. Part of the Sol C. Snider Entrepreneurial Research Center, it is one of 16 SBDCs in Pennsylvania. They provide assistance to small businesses in the greater Philadelphia region. In the past decade over 20,000 small businesses and entrepreneurs have benefited from their support. The three main types of services they offer are: information, courses, and consulting. In addition, they have special programs such as: VIP incubator (described above) and Philly 100, a program that identifies and honors the 100 fastest growing, privately held entrepreneurial companies in the Greater Philadelphia Region.
 - *Women's Investment Network (WIN)*. WIN provides networking opportunities, helps establish mentoring relationships, and introduces members to sources of investment capital. Anne-Marie Corner, WG'89, president and founder of the biotech firm Biosyn and co-founder of WIN states: "By bringing female entrepreneurs together, we learn from one another's experiences, increase the size of our investment networks, and provide support to help our businesses grow and become hugely successful." <http://www.winwomen.org/>

Harvard University – Harvard Business School (#4)

<http://www.hbs.edu/mba/experience/learn/entrepreneurship/index.html>

- **Entrepreneurship Education Overview**: Building on its 50-year history of research and teaching in the field of entrepreneurship, Harvard Business School enables students to test their business ideas in a risk-free environment. Entrepreneurial management has become part of the first-year required curriculum, while over 45 faculty members teach approximately 24 courses offered in entrepreneurship in the second-year elective curriculum. Research interests range from a historical perspective on entrepreneurship and business, to financial, legal, and human resource issues facing entrepreneurs.
- **Entrepreneurship Activities**
 - *HBS Entrepreneurship Research*. The intellectual history of the entrepreneurial management field at the Harvard Business School dates back to the late 1930s. HBS is well known for its research in entrepreneurship, particularly in publishing cases. In recent years the approach at HBS has focused on "how" entrepreneurship is accomplished, not just "who" and "what."
 - *HBS Business Plan Contest*. In 2003, this hugely popular contest will mark its eighth anniversary. The contest gives second-year students the chance to put their learning to the test and submit their business plans for evaluation in pursuit of prizes for the most promising ideas. During the course of the year, student-organized help sessions bring venture capitalists, attorneys and entrepreneurs to campus to help students understand the dimensions of building a business. Student teams present before an audience of faculty, students, staff and a panel of judges that include representatives from some of the area's leading venture capital firms. Two teams won in 2002 – one in a traditional track and the other in a social enterprise track. Each team took home \$10,000 in cash and \$10,000 of in-kind legal and accounting services.

- *California Research Center.* HBS opened this center on Silicon Valley's Sand Hill Road in 1997 to facilitate faculty research and case writing on the issues and industries focused in the Valley and Bay Area. The intent is to both enrich Harvard's MBA and Executive Education programs and to further the state of knowledge about issues and industries that are focused here. Over 60 cases have been produced from this center in the last three years.
- *New Business.* This publication is a twice-yearly overview of the entrepreneurial pursuits at HBS.

University of Southern California (#5)

http://www.marshall.usc.edu/web/Lloydgreif.cfm?doc_id=1046

- **Entrepreneurship Education Overview:** USC's **Lloyd Greif Center**, in the Marshall School of Business, is designed to help students develop an entrepreneurial attitude of being open to change, developing new ideas and thinking outside the box and beyond the limitations of existing paradigms. This blend of tools, skills and attitude equips the graduates to organize and manage new ventures.
- **Entrepreneurship Activities**
 - *Business Expansion Network.* The Business Expansion Network (BEN) is a key component of the Community Economic Development division of USC's Office of External Relations. The program was initiated in the Marshall School of Business Entrepreneur Program in 1991, and has doubled in size every year since its inception. As an organization that sparks business expansion with an entrepreneurial mindset, BEN assists Los Angeles entrepreneurs in planning for growth by providing them business training and technical assistance. In 1995, BEN business analysts spent 4,524 hours in consultation with their clients. 39 jobs were created, and more than \$1,600,000 in loans were packaged and approved. http://www.usc.edu/ext-relations/unipark/bus_exp_net.html
 - *Family & Closely Held Businesses Program.* The Family & Closely-Held Businesses Program provides a wide range of resources focused on the unique issues of family owned and managed businesses. This program brings owners and managers of mid-sized family companies together in interactive forums to address the issues of business and of business families. They provide powerful resources to help business families successfully work through transitions, develop strategic vision and enact strategic plans for the business and for the family, broaden their perspectives through outside resources, and acquire and implement cutting edge personal and management knowledge and skills. http://www.marshall.usc.edu/web/FamilyBusiness.cfm?doc_id=1012
 - *Entrepreneur of the Year Award.* This award gives students, faculty and alumni the chance to seek counsel from successful leaders in the business community. Because of the high profile of the award and the prominence of the Lloyd Greif Center in the business community, the event has attracted some of the most innovative entrepreneurs to share their ideas and experiences during a whole day of Q & A and networking opportunities.

Massachusetts Institute of Technology (#6)

<http://entrepreneurship.mit.edu/index.php>

- **Entrepreneurship Education Overview:** MIT's Sloan School of Management has made the study and practice of entrepreneurship central to its culture; entrepreneurship has been a part of the Sloan curriculum for more than 40 years. Two of the MBA Program management tracks—eBusiness, and New Product and Venture Development—are devoted to it. This pervasive vision also influences countless other aspects of life at Sloan. <http://mitsloan.mit.edu/mba/academics/entrepreneurship.php>
- **Entrepreneurship Activities**
 - *MIT Entrepreneurship Center.* From its home on Sloan's campus, the Entrepreneurship Center serves all of MIT, anchoring a broad and growing array of activities, programs, and resources in entrepreneurship. The Center's mission is to inspire, train, and develop new generations of entrepreneurial leaders who will bring success to new ventures. Its ongoing research and education programs track the progress of entrepreneurs who are developing and commercializing cutting-edge technologies. They also work with and learn from the practicing entrepreneurs who serve as adjunct faculty. MIT Entrepreneurship Center team provides content, context, and contacts that enable entrepreneurs to design and launch successful new ventures based on innovative technologies. They help MIT students, alumni, and colleagues access an array of educational programs, networking opportunities, technologies, and resources, both at MIT and around the world. Members of the MIT E-Center community form a global network to actively advise and assist each other for mutual benefit, enabling them to set and meet their highest expectations.
 - *The MIT \$50K Entrepreneurship Competition.* Launched in 1990, this business plan competition is designed to encourage students and researchers in the MIT community to act on their talent, ideas and energy to produce tomorrow's leading firms. Now in its 14th year, the competition has awarded hundreds of thousands of dollars in cash and business startup services to outstanding teams of student entrepreneurs who submitted business plans for new ventures showing significant business potential. The refinement process of the competition, its network of mentors, investors and potential partners, and the cash prizes awarded have helped many of these teams to act on their dreams and build their own companies and fortunes. <http://50k.mit.edu/about/index.php>
 - *The MIT \$50K Global Startup Workshop (GSW)* is the premier conference for organizers of business plan competitions. The GSW has allowed the MIT \$50K to develop the first global network of competitions, as well as to share expertise worldwide. Past GSWs have been co-hosted in Cambridge (USA), Singapore, Seville, and Melbourne. The Sixth Annual MIT \$50K Global Startup Workshop 2003 was scheduled to take place in Beijing but was cancelled due to the SARS epidemic. <http://50k.mit.edu/gsw/2003/>
 - *The MIT Enterprise Forum, Inc.* educates entrepreneurs about new ventures and early-stage management. A volunteer, non-profit organization based at MIT, its mission is to strengthen the process of starting and growing innovative technology-oriented companies by providing a series of specialized executive education programs that educate, inform and support the entrepreneurial community. Founded in 1978, the Forum operates through a network of 24 chapters in the United States and overseas. Each chapter provides advice, support and educational services to local emerging technology-based companies. Member chapters are formed around a core group of MIT graduates. Membership and program participation is open to all interested parties. A

volunteer board of experienced entrepreneurs, corporate executives, university professors, and industry leaders runs each chapter.
<http://web.mit.edu/entforum/>

- *MIT Entrepreneurs Club.* The MIT E-Club helps promote new ventures in the MIT community. The network was established to make the process of starting a business easier. The e-club includes MIT students, faculty, alumni, friends, and professionals from outside MIT, representing a full spectrum of backgrounds in business, engineering, and the arts & sciences, including founders of innovative companies. <http://www.mit.edu/activities/e-club/e-club-home.html>
- *Technology Capital Network (TCN)* is a not-for-profit organization whose mission is to "make money flow between investors and entrepreneurs." To that end, TCN offers educational programs and opportunities for companies to present to an investor audience. TCN is the nation's longest established venture capital network. <http://www.tcnmit.org/>
- *E-Lab CEO Reception.* This semi-annual event recognizes E-Lab companies for their contributions to the intellectual life of the school. They also hold various networking receptions and dinners around the world. Members of the MIT Entrepreneurship Society (E-Society) are always invited to these events.
- *Global Programs.* As part of MIT's mission to train successful entrepreneurs who drive the global high tech economy, the MIT Entrepreneurship Center partners with institutions, companies, and individuals in regions of the world committed to high tech entrepreneurship. Collaborations to date have been held in, among others, the UK, Ireland, and Taiwan; eventually, these collaborations may include Germany, the Middle East, Asia, and Latin America. The MIT E-Center shares curricula, faculty, and research to support collaboration with like-minded high tech entrepreneurial centers around the globe. These efforts, combined with related courses such as Entrepreneurship Without Borders and the Global E-Lab, provide a framework for analyzing and better understanding the social, political, and economic implications of building new enterprises in different areas of the world.
- *International Events.* Every year, the MIT E-Center hosts a number of seminars and receptions in Cambridge and in other high tech hot spots across the United States and around the world. Locations have included London and Cambridge (UK), Cologne and Munich, Tokyo and Sapporo, Dublin, Rio de Janeiro, Istanbul, Seattle, Menlo Park, Toronto, Washington, and New York. Attendees typically include CEOs, VCs involved in high tech, entrepreneurs, and top university officials. These events are often planned in partnership with local alumni clubs and MIT Enterprise Forum chapters.
- *MIT Center for E-Business.* The MIT Sloan School of Management created the Center for E-Business at MIT to provide leadership for faculty, students, and industry interested in Internet-enabled business. Developments in this field are transforming the economy while creating new opportunities and challenges. The mission is to be the leading academic source of innovation in management theory and practice for e-business. <http://ebusiness.mit.edu/>

University of Texas – Austin (#7)

<http://www.bus.utexas.edu/research/hkcenter/>

- **Entrepreneurship Education Overview:** For two decades, McCombs School of Business has been at the forefront of the entrepreneurial paradigm shift incubating new ventures and providing individual entrepreneurs with the tools they need for success. The entrepreneurship curriculum includes courses on all aspects of the entrepreneurial venture including identifying opportunities, commercializing intellectual property, selecting advisors and board members, and launching and growing an entrepreneurial firm.
 - *Master of Science in Science and Technology Commercialization (MSSTC).* <http://msstc.ic2.org>. Offered in the IC2 Institute (see below), and designed for working professionals, the MSSTC program focuses on the processes of translating ideas into commercially viable goods or services. MSSTC students are organized into teams to:
 1. Plan technology assessments
 2. Develop strategies to commercialize technologies, and
 3. Create and present technology commercialization plans to venture capitalists
- **Entrepreneurship Activities**
 - *Herb Kelleher Center for Entrepreneurship.* The Kelleher Center aspires to be the country's leading academic center focused on entrepreneurship. The Kelleher Center and chair will add to existing programs at the McCombs School of Business, while creating a forum for successful entrepreneurs, students and faculty. Start-ups will not be the only area of focus. In the spirit of Southwest Airlines, the center will foster the application of entrepreneurship principles to companies of all sizes, spurring corporate growth and renewal.
 - *The Hicks, Muse, Tate & Furst (HMTF) Center for Private Equity Finance.* Founded in 2000, the purpose of the Center is to support curriculum development in a private equity specialization in the McCombs School MBA program. The center also fosters research and scholarship by finance faculty and graduate students on issues related to private equity finance, capital markets, corporate finance, investments, real estate, and other associated matters. The private equity curriculum is designed to help MBA students prepare for careers that require an in-depth understanding of the private equity market. While there is a heavy emphasis on finance, the curriculum is multidisciplinary in that it includes courses in all of the traditional functional areas of business as well as more specialized courses covering concepts directly related to the private equity market and managing private equity investments. The curriculum develops skills that are especially important for students interested in careers with investors in private equity funds, private equity fund managers, issuers of private equity securities, or other important participants in the private equity markets, such as commercial banks, investment banks, or other investment advisors or agents.
 - *Austin Technology Incubator (ATI)* supports promising high growth companies in a variety of technology-based industries, through a targeted services package which includes strategic advice, access to financing, marketing & P.R. support, benefits program, mentoring, and turn-key infrastructure. ATI is supported by the University of Texas, the City of Austin, and the Austin community, and works with a variety of investors, a "know-how network" of professional service providers, outside industry experts, and others, for the benefit of its member companies. <http://www.ic2-ati.org/index.asp>

- *The Institute for Innovation, Creativity, and Capital (IC²)* is a University of Texas research laboratory dedicated to the continuing, sustainable economic growth of the nation and the world. IC²'s mission is to explore, experiment with, and extend capitalism to generate economic prosperity that leads to sustainable and civil societies. IC² has a suite of activities to support its mission, including: the Austin Technology Incubator, the Masters of Science and Technology Commercialization degree program, a global practice to educate and train others in leading-edge economic development, and an E-Learning and Training laboratory for ensuring that every citizen has the opportunity to gain the necessary skills to be productive and employed. <http://www.ic2.org/>
- *MOOT CORP® Competition* is an international business plan competition and a centerpiece of the McCombs curriculum. The MOOT CORP® Competition has been called "the Super Bowl of world business plan competitions" (Business Week – 1993), "the mother of all business plan competitions" (Success – 1997), and "the granddaddy of them all" (Red Herring – 2000). The competition draws teams from MBA programs all over the world; the winner receives a \$100,000 investment to facilitate launching their venture.
- *Venture Capital Investment Competition (VCIC)* is a one-of-a kind competition in which teams of MBA students from top business schools are placed in the role of venture capital firms deciding among various investment opportunities. These opportunities are real companies seeking venture capital investment. Real venture capitalists select the top teams to win cash prizes. The McCombs School hosted VCIC during 2001 and 2002.

University of California – Los Angeles (#8)

<http://www.anderson.ucla.edu/research/esc/>

- **Entrepreneurship Education Overview:** The Anderson School has long been known for encouraging an "entrepreneurial spirit" among its students. This spirit has helped Anderson gain its reputation as the top entrepreneurial program in the country, as noted by *Business Week* magazine. *Success* and *U.S. News & World Report* also rank it among premier programs. Anderson offers one of the most extensive curriculums in entrepreneurial studies of any business school in the world. It has more than a dozen classes designed specifically to train entrepreneurs, and several unique hands-on programs, all of which are overseen by the **Harold Price Center for Entrepreneurial Studies**.
- **Entrepreneurship Activities**
 - *Harold Price Center for Entrepreneurial Studies at The Anderson School at UCLA.* A recognized leader in entrepreneurial education and research, the Center oversees all teaching, research, extracurricular, and community activities related to entrepreneurship at UCLA. MBA students may choose to take several advanced electives that focus on entrepreneurial or emerging ventures. These courses include venture-initiation, small business management, financing emerging enterprises, and business plan writing. Field studies (six-month consulting projects by teams of three to five students) may be conducted with entrepreneurial firms as well.

- *Research.* The Price Center established the *Center for Research in Entrepreneurship, Business Development, and Innovation (CREBDI)*, to organize conferences and disseminate information based on the latest management research. CREBDI develops and executes academic conferences, research papers, and oral histories. Four of these efforts are the Galef Symposium in Entrepreneurship and Business Development, the Steinbeck Symposium for the Study of Family-Owned Businesses, *Entrepreneurs of the West: An Oral History Program*, and the *Family and Closely Held Business Program*.
<http://www.anderson.ucla.edu/research/esc/Research/REIntro.html>
- *The Management Development for Entrepreneurs (MDE) Program.* Offered by the Harold Price Center, the MDE is a certificate program that is a premiere educational opportunity enabling entrepreneurs to develop essential management skills and strengthen their ability to build and manage effective and profitable organizations. MDE provides participants with a varied curriculum of lectures, case discussions, applied workshops, and business improvement consultation to help them develop management tools to confront issues facing today's growing enterprises. MDE is an intensive training program that provides participants with instruction in cutting-edge theory and practice in areas such as strategy, marketing, finance, operations, and management. Award-winning Anderson School faculty members who have proven successful in teaching entrepreneurship lead all MDE classes. Participants also receive individual consultative assistance and work closely with faculty to confront issues facing today's growing enterprises. In addition, entrepreneurs work with faculty and MBA Fellows to formulate a Business Improvement Project (BIP) designed to address specific issues within the participant's company. The BIP is a blueprint for action that uses the skills and knowledge gained in the program to make significant changes to the entrepreneur's business. The program-long relationship with the MBA Fellows and the development of the BIP are two important features that set the Anderson MDE Program apart from similar programs offered at other institutions.
- *The Entrepreneur Association (EA).* The largest student organization at The Anderson School, the EA sponsors over thirty extracurricular activities that provide involvement opportunities for students, entrepreneurs, and business developers. These programs include noon speakers, an annual conference on entrepreneurship and a venture proposal competition. Particularly innovative programs are the Venture Fellows Program and the Student Investment Fund, which provide hands-on experience in the venture capital and investment management fields. Following is a listing of EA programs and events
www.uclamba.com.
 - *Business Acquisition Series.* This lecture series helps students gain an understanding of the issues and mechanics of business acquisitions. Topics include the search process, assessing a business as an acquisition, due diligence, structuring the deal, and financing an acquisition.
 - *Council of Entrepreneurs.* Students are paired with an entrepreneur for the purpose of conducting interviews to gain insight into the training and practices of successful business people. Mentor/mentee relationships are expected to develop. Each student contributes to a database of information about entrepreneurs.

- *Dinners for Eight.* An ongoing series where eight selected Anderson students enjoy a private dinner with a key member of the Price Center's Board of Advisors, either at the board member's home or in a fine restaurant. A fantastic mentoring and networking opportunity.
- *Mentor Program.* Through an application process, a small number of students are given the opportunity to meet informally with successful entrepreneurs, including Anderson alumni. The group(s) meets every other week to hear about the career path, challenges, failures, and rewards of these entrepreneurs.
- *Speaker Series.* During brown bag lunches and evening events, accomplished entrepreneurs visit Anderson to provide insights on topics such as networking strategies, securing venture capital, and managing start-up companies.
- *Social Entrepreneurship Speaker Series.* This program brings a different focus to the Entrepreneur Association. Key speakers from companies that focus on social responsibility, non-profit organization managers, and others discuss the entrepreneurial aspects of running their businesses, and how entrepreneurs can give back to society.
- *TEC-on-Campus.* The Executive Committee (TEC) is an international organization of entrepreneurial presidents and CEOs that holds monthly meetings to discuss current business issues. 30 students with entrepreneurial interests are chosen for this two-year program. Monthly meetings are hosted by a TEC member's place of business for a full day visit.
- *Think Tank.* The purpose of this program is two-fold: to provide a structured bi-weekly discussion of start-up issues and to provide an informal, confidential setting for students to share business ideas. Guest lecturers cover many important issues of starting a business.
- *Venture Capital Speaker Series/Private Equity Panel.* This series brings key management from venture capital and private equity firms to campus to discuss crucial aspects of those two industries. Structured as lectures with Q & As, this in-depth series assumes that participants are already familiar with basic venture capital topics.
- *Introduction to Venture Capital (VC101).* A short series of discussions by Anderson students, alumni, and guest speakers, this program is designed to introduce students to the basics of venture capital and private equity. *Venture Capital Roundtable:* A limited number of students meet informally with venture capitalists. Because most venture firms do not attend brown bag or interview on campus, this event allows students an opportunity to interact with more than a dozen top venture capitalists from a number of different funds.
- *International Entrepreneurship Night.* Much like the Venture Capital Roundtable, this event provides an opportunity for students to mingle in a casual setting with internationally successful entrepreneurs. Given the growth in overseas opportunities, this is an excellent way to explore entrepreneurship worldwide.
- *Women in Entrepreneurship Night.* This program promotes interaction between top women business leaders, the Women's Business Connection, and students. Women entrepreneurs share their views on

issues such as competing in the executive arena, balancing personal goals, and societal expectations.

- *YPO Roundtable.* The Young Presidents' Organization is a group of successful business leaders who reach executive management before age 40. At this event, students can network with YPO members and get the inside track on what it is like to run a company.
- *Knapp Venture Competition.* The venture proposal competition provides an opportunity to present formal business plans, sharpen writing and presentation skills, and receive critiques from several successful venture capitalists, bankers and other investors. Proposals are judged on idea originality, completeness of investigation, and viability of project. Finalists share cash prizes of several thousand dollars. <http://www.uclamba.com/knapp/index.htm>
- *Fellowships and Experience Programs.* The Price Center administers several fellowships, award programs, and teaching assistant opportunities that allow MBA students opportunities to test classroom theory and learn from a breadth of practical management experiences. Fellowships initiated and sponsored by the Price Center are available each year on a competitive basis. Students who earn fellowships will put their management skills to work while developing their own entrepreneurial ideas in such areas as finance, non-profit management, and small business consulting.
 - *Price Institute Fellowship.* The Price Institute offers an award to one or two students who have shown outstanding promise and interest in the area of entrepreneurship. Recipients are chosen at the end of the first year of the MBA Program.
 - *Patrick J. Welsh Fellowship.* Applicants for the Welsh Fellowship should demonstrate leadership potential and aspire to work in an entrepreneurial environment, either starting a business, working in a growing company, or working with entrepreneurs as a venture capitalist. Financial need is a factor. Several fellowships are offered each year. This fellowship is made possible through Patrick Welsh (MBA '69), founding general partner of buyout firm Welsh, Carson, Anderson & Stowe.
 - *Deutschman Venture Fellowship.* The Venture Fellows Program provides MBA students with hands-on venture capital management, and investment training, and/or operating company experience. Selected students are placed with sponsoring venture capital firms or portfolio companies for three-month summer internships. Financial support for their work is provided by a stipend from the Deutschman Venture Fellows endowment and a monthly salary comes from the participating firm. <http://www.anderson.ucla.edu/research/esc/MBAs/MBAVF.html>
 - *Management Development for Entrepreneurs.* This program provides owners of growing businesses with the opportunity to acquire the management skills they need to effectively seek a larger share of the contract business with public utility and information systems companies in California. Fellows respond to individual questions during the seminars and help participants apply new information and techniques to their Business Improvement Projects. The MDE program is conducted twice a year. The program manager selects six to seven fellows prior to each series. <http://www.anderson.ucla.edu/research/mde/>

- *Head Start – Johnson & Johnson Management Fellowship Program.* The program is designed to strengthen management skills and develop an entrepreneurial competence in Head Start Directors. Each summer two 2-week sessions are held with 40 participants in each group. Under faculty supervision, MBA students develop and write case studies based on selected participants' Head Start agencies. Fellows attend program sessions to assist faculty and help participants develop a Management Improvement Project, to be implemented by the Head Start director upon completion of the program.
<http://www.anderson.ucla.edu/community/headstart/>
- *Larry Wolfen Entrepreneurial Spirit Award.* The Award was established in memory of Larry Wolfen, a 1993 graduate of The Anderson School at UCLA. Entrepreneurial promise is the primary criteria for Wolfen Award selection. Recipients will not necessarily be those with the most fully developed ideas, but rather those who demonstrate an innate curiosity for exploring entrepreneurial concepts combined with the potential to transform these concepts into viable business opportunities. The award consists of a stipend to be paid between the first and second years of the MBA Program, intended to provide for living expenses while a student conducts exploratory research into an idea, or otherwise advances a project.
<http://www.anderson.ucla.edu/research/esc/MBAs/MBAwolfen.htm>
- *Young Presidents' Organization South Bay Chapter Fellowship.* This fellowship is awarded to an MBA student with solid academic credentials and with demonstrated leadership abilities. Further criteria include and interest in entrepreneurship, new wealth creation, and the challenge of business development. Winners are expected to attend at least one YPO event per year and must be under 30 years of age at the time of the fellowship, making it possible to meet the age requirement for future membership in YPO. One MBA student is chosen each year, between the first and second years of school.
- *UCLA Venture Development Program.* Paid internship opportunities are available for second year students who serve as project managers through this program.
- *Student Investment Fund (SIF).* The UCLA SIF allows selected second year MBA candidates to invest real money in the stock and bond markets. Conducted under the auspices of the Price Center for Entrepreneurial Studies, the faculty-supervised group engages in all aspects of portfolio management, investment analysis, asset allocation, and trading strategies, as would a professional management team. Students are responsible for all administrative details of managing the fund (which currently exceeds \$1.7 million), and also arrange for guest speakers. <http://www.anderson.ucla.edu/research/esc/MBAs/MBASIF.html>
- *Alumni Program.* The Price Center takes an active interest in the alumni of The Anderson School and considers them strategic partners in many of its efforts. The Price Center seeks opportunities in which to involve alumni in its academic and experiential programs as a way to grow and maintain valuable relationships. This interaction also exposes current students to a considerable range of career options, business advice, and willing mentors.
 - Through a variety of programs, alumni are invited back to campus to talk about their post-Anderson experiences. The Entrepreneur Association sponsors many of these programs. The EA draws heavily from the ranks of Anderson alumni to serve as advisors and speakers.

- Several Anderson alumni serve on the Price Center's Board of Advisors.
- Recognizing the value of an Anderson education and the caliber of its students, several alumni have offered internship opportunities to the current classes.
- Anderson alumni are often targeted guests of events such as the Galef Symposium in Entrepreneurship and Business Development.

Columbia University (#9)

<http://www.gsb.columbia.edu/entprog/>

- **Entrepreneurship Education Overview:** Columbia Business School has one of the most comprehensive and well-regarded entrepreneurship programs in the world. At Columbia, the Entrepreneurship Program is not just a tutorial on how to launch new ventures. Instead, the program is structured to emphasize two key components of entrepreneurship. The first of these is the process of identifying, valuing and capturing opportunity. These activities, crucial in any organization, require using business disciplines in a highly integrative way. The second is an emphasis on individual initiative, uncertainty and tight resources, that is, entrepreneurial situations typically involve innovative activities and highlight the roles of key management players and a financial plan. While these are distinguishing features of entrepreneurial opportunity, virtually all business students will encounter these challenges in some form, whether as entrepreneurs, consultants, financiers or managers of firms. The unique nature of entrepreneurship led Dean Meyer Feldberg to devise a three-part approach to its study at Columbia: the systematic integration of entrepreneurial situations into the core curriculum, strong elective course offerings in entrepreneurship, and structured, hands-on lab courses.
- **Entrepreneurship Activities**
 - *The Eugene M Lang Center for Entrepreneurship* serves as a living laboratory for students' entrepreneurial ventures. Unique in its hands-on, vigorous approach, the center was specially created to work with students aiming to launch new ventures. A highlight of this resource is the use of mentors — among them successful graduates from every industry — who provide students with a level of advice and guidance that can come only from highly seasoned professionals.
<http://www-1.gsb.columbia.edu/entprog/index.cfm>
 - *The Eugene Lang Entrepreneurial Initiative Fund* was established in 1996 by an initial gift of \$1,000,000 from Eugene Lang, MS '40, Founder and Chairman Emeritus of REFAC Technology Development Corporation. Its objective is to foster an entrepreneurial environment at Columbia Business School by providing students who conceive qualified business initiatives with seed capital for carrying them out after graduation. It also provides the Business School with opportunities to share in the success of funded ventures through negotiated equity or other participation. <http://www-1.gsb.columbia.edu/entprog/about.cfm?action=ventures>
 - *The A. Lorne Weil Outrageous Business Plan Competition:* With financial support from A. Lorne Weil, MBA '71, chairman and CEO of the Autotote Corporation, the Columbia Entrepreneurs Organization sponsors an annual competition that encourages students to explore creative, ambitious entrepreneurial ideas that might otherwise be dismissed as simply outrageous. Students explore these ideas while learning firsthand what goes into the development and presentation

of a solid business proposal.

http://www.gsb.columbia.edu/entprog/activities/out_bpc.htm

- *The Entrepreneurial Greenhouse Program* assists students in readying their businesses for investment by providing funding for pre-launch expenses, access to experts in key areas and opportunities to present business concepts to professional investors. An extensive screening process determines entrance into this program, and acceptance is limited to those with the top business plans. To apply, students submit a complete business plan and make a formal presentation to the Greenhouse Selection Committee in December. In its inaugural year, more than half of the ventures incubated in the Greenhouse were launched by graduation. During the program, Greenhouse participants consult with seed funders to refine their presentations. Sponsors, who include venture capital firms, Internet incubators, law firms, technology providers, and accounting and consulting firms, provide financial support, pro bono services and advice. The Greenhouse provides the seed funders with the opportunity to invest in student projects and also helps many students prepare for application to the Eugene Lang Entrepreneurial Initiative Fund, although this is not a requirement for consideration.
- *Annual Principal Investing Symposium*: Hosted by the Private Equity Club, this annual forum allows current students and graduates to interact with prominent LBO professionals and provides an unparalleled opportunity for those interested in finance, consulting, management and venturing to learn firsthand from world-class practitioners. Past guest speakers include Russell L. Carson, MBA '67, general partner, Welsh, Carson, Anderson & Stowe; Arnold L. Chavkin, MBA '77, general partner, Chase Capital Partners; Alan J. Patricof, MBA '57, chairman, Patricof & Co. Ventures, Inc.; and David W. Zalaznick, MBA '78, managing partner, Jordan/Zalaznick Capital Company.
- *Science and Technology Ventures* (formerly Columbia Innovation Enterprise): The Science and Technology Ventures seeks to commercialize University-based technology by working with faculty members and industry and venture capital groups to start new businesses based on Columbia's intellectual property. One program example appears below; refer to website for others.
<http://www.stv.columbia.edu/>
 - *The Center for Advanced Technology (CAT)*. Columbia University's CAT is a joint effort of the Department of Medical Informatics at Columbia Presbyterian Medical Center in conjunction with the Computer Science Department (School of Engineering at Columbia) and the Columbia Genome Center. The CAT is now focused on three major applications: GeneWays, software that extracts information from research literature; GENIES, a natural language processing information extraction program; and, WeaVe, speech recognition technology for the World Wide Web.
- *National Social Venture Competition*, a partnership of the Haas School of Business, at UC Berkeley, Columbia Business School and The Goldman Sachs Foundation, is the only nationwide business plan competition that promotes the creation of social ventures. That is, businesses with high financial and social return on investment. More than \$100,000 is available in seed capital.
<http://www.socialvc.net/index.cfm>
- *Clubs*. An array of clubs and programs associated with the Columbia Entrepreneurship Program help students establish their own businesses, assist start-up and existing businesses in the New York metropolitan area and sponsor student business plan competitions, lectures, conferences and workshops.

- *Columbia Entrepreneurs Organization (CEO)*: The CEO aims to provide Columbia Business School students with opportunities to develop their entrepreneurial talents, network with other students and start their own businesses. It sponsors many activities, including student consulting services (linking students and small businesses to help students gain experience with start-up and early-stage companies), guest lectures and community projects. The CEO also sponsors the annual A. Lorne Weil Outrageous Business Plan Competition and is actively involved with the Eugene Lang Entrepreneurial Initiative Fund.
- *National Social Venture Competition Club*: The NSVC organizers aim to promote the creation of social ventures – businesses with high financial and social returns on investment. The competition originated at the Hasso School of Business at UC Berkeley.
- *Columbia Women in Business* exists with a mission to provide women with the resources to assist them in their professional careers and to promote the role of and opportunities for women in business. They are currently assembling an exciting program of events to enable all women alumnae and students of Columbia Business School to freely and efficiently contact one another, to foster relations and to share in collective resources, wisdom and experience.
- *High Technology Group*, which includes students from all of the School's disciplines, provides a forum in which members sharing an interest in high-technology industries may gather and exchange information.
- *Internet and Technology Business Group (ITBG)*, which acts as a catalyst for interaction between the School and the greater Internet community, aims to expose students, faculty members and administrators to electronic communication's opportunities, risks and limitations.
- *Net Impact*: Columbia Business School's Net Impact chapter, part of a national network of business leaders committed to creating a better world, primarily serves two types of students: those who intend to build careers as professional managers in the public or non-profit sectors and those who are interested in socially responsible business practices and philanthropy. Net Impact also educates the entire student body about these issues through guest speakers and panel discussions. The organization provides career resources for students interested in public and non-profit management, social enterprise and socially responsible business.
- *Private Equity Club*: The mission of the Club, a student organization for students interested in venture capital, LBO and private equity investing, is twofold. First, it seeks to provide access to private equity investing by attracting experienced students, practitioners and job opportunities to campus. Second, it seeks to expose the School community to the dynamics of the venture capital industry by sponsoring guest speakers, workshops and such conferences as the Annual Principal Investing Symposium.
- *Entrepreneurial Sounding Board*. The Lang Center is continuing to offer opportunities for MBA students to schedule one-on-one meetings with members of the Entrepreneurship Program faculty to discuss their own entrepreneurial ideas and perceived business opportunities. The half-hour sessions will provide students with a platform to receive preliminary feedback, "next step" action items,

and, in many cases, links to additional support from appropriate mentors. All sessions will be confidential.

- *Business Alumni Network Community (BANC):* More than 29,000 Columbia Business School Alumni are now as close as your computer. The online BANC allows free lifetime communication in a password-protected, Web-based environment. BANC provides more than a lifetime e-mail address. www.gsb.columbia.edu/alumni/
- *Community Outreach:* The Small Business Consulting Program (SBCP) provides pro bono consulting to a variety of small businesses. This student-managed organization joins forces with the Columbia Entrepreneurs Organization and the School's Social Enterprise Program to maintain a diverse base of clients and student consultants.

University of California – Berkeley (#10)

<http://entrepreneurship.berkeley.edu/>

- **Entrepreneurship Education Overview:** The University of California – Berkeley, located at the epicenter of American high-technology innovation, has long been a hotbed of entrepreneurial activity. Its business school was one of the first in the nation to offer courses in entrepreneurship and business development. The study and practice of entrepreneurship is alive and well at the Haas School of Business, which offers its students and the community the skills and knowledge to launch fast-growth, high potential enterprises. Through the Lester Center for Entrepreneurship and Innovation, it sponsors a series of innovative programs and activities that provide networks and connections, mentoring and advice from experts, and the infrastructure to actually begin a startup. <http://www.haas.berkeley.edu/advantage/entrep.htm>
- **Entrepreneurship Activities**
 - *Lester Center for Entrepreneurship & Innovation.* With the creation of the Lester Center in 1991, entrepreneurship moved to the forefront of the Haas School's strategy. The growing competitive importance of new business formation and corporate innovation to the national and global economies led the Haas School to expand its programs further. Today the Lester Center is the principal locus of interdisciplinary activities related to entrepreneurship at UC Berkeley. The mission and purpose of the Lester Center:
 - Fosters teaching of successful entrepreneurship and innovation,
 - Encourages Berkeley students in the creation of new businesses,
 - Creates and disseminates knowledge on entrepreneurship and entrepreneurial finance to the business and university communities,
 - Facilitates interaction between the entrepreneurial community and the university.
 - *UC Berkeley Business Plan Competition.* In its fifth year, this competition has continued to evolve as a leading Bay Area event and one of the nation's foremost business plan competitions. It gives students, alumni and local entrepreneurs the opportunity to work together to turn innovative ideas into real businesses. The event also brings together the finest research and technology ideas from both UC Berkeley and UC San Francisco. Each year participants develop business plans that are based on some of the most exciting new technologies. Last year more than 200 aspiring entrepreneurs entered plans in areas as diverse as nanotechnology, biotechnology, computing services and software, consumer goods, financial services, and the Internet. <http://bplan.berkeley.edu/>

- *Berkeley Business Incubator.* In 1997, supporters of the Lester Center established a business incubator for start-ups created by current Haas School students and recent graduates. Located near the business school, the incubator is designed to provide office space and advanced telecommunications capabilities to promising new ventures that have progressed beyond initial planning. Proximity to the school also allows enhanced access to the Lester Center's resources, including the networks of venture capitalists, attorneys, accountants, and consultants that are so important to the Bay Area's entrepreneurial process. The incubator is funded with donations from advisers and friends of the Lester Center.
- *Young Entrepreneurs at Haas (YEAH)* is one of the Haas School's innovative programs for urban youth. YEAH serves as an important link between the resources and expertise of the Haas School's students, faculty and facilities and the surrounding community. In partnership with UC's Office of the President and the Statewide MESA program, YEAH's curriculum has been designed not only to build business skills, but also to assist youth become eligible and competitive for college. YEAH offers the following programs for teen entrepreneurs:
<http://www.haas.berkeley.edu/yeah/>
 - *Young Entrepreneurs Program (YEP)* – YEP is a two-year program that gets youth excited about business and on a college-planning track. Each spring, YEP accepts 40 eighth graders into the first year of the program.
 - *Business, Economics, Technology Achievement (BETA)* – BETA offers training and mentoring support to local public high schools and middle schools in Oakland, Berkeley, San Francisco and West Contra Costa.
- *Berkeley Entrepreneurs Forum* – The Bay Area's Premier Networking Opportunity. Speakers, panels, and seminars on entrepreneurial topics. Networking, meeting ground for entrepreneurs, investors, students, and faculty. The Forum meets monthly during the academic year: August to November, and January to April. <http://entrepreneurship.berkeley.edu/bef.asp>
- *Berkeley Solutions Group:* The BSG is an organization run and staffed by MBA students who provide consulting services to entrepreneurs, small business, and non-profit organizations that cannot afford professional consulting fees. BSG students work either singly or in groups to help small firms or start-ups with that special project that will create growth. Typical projects are:
 - Market Research
 - Feasibility Studies
 - Financing Plan for Line of Credit
 - Operational Structure
 - Marketing Plan
- *Partners for Entrepreneurial Leadership (PEL).* Started by a first-year MBA student in April 1990, the PEL program matches innovative start-up companies with MBA students as a part of a summer internship program. PEL works with individual host companies to match the skills and professional experience of the intern with each firm's specific business needs. PEL members are aspiring entrepreneurs and managers, typically in companies less than 50 persons. Partially funded by the Price Institute, PEL interns work with company executives on high-profile projects developing new business plans, finding new markets and distribution channels, exploring financing alternatives, and improving information systems. Often, BSG projects lead to PEL internships, and vice versa.
<http://groups.haas.berkeley.edu/ea/pel.asp>

- *Haas Entrepreneurs Association (EA)*. Fully one-third of each MBA class joins the EA, which organizes and presents a varying array of programs and opportunities for their classmates and other members of the Haas community. The mission of this organization is to create and foster a dynamic entrepreneurial environment for its members by providing innovative opportunities, meeting forums, and resources. Working closely with the Haas internal and external community, its goal is to provide support and encouragement to create top-quality entrepreneurs across industries. Haas Entrepreneur Association is the largest student organization on campus, with over 250 members.
<http://groups.haas.berkeley.edu/ea/default.asp>
- *Student Fellowships*. Three programs are offered:
 - *Price Institute Fellows*. Each year, the Lester Center awards two Price Institute Fellowships to Haas MBAs who show great promise as future entrepreneurs. <http://entrepreneurship.berkeley.edu/price.asp>
 - Venture Capital Fellows*. A competitive program established in 1997, also with funding from the Price Institute, places Haas MBA students as summer interns in Bay Area venture capital firms. The Lester Center annually selects exceptional first year MBA students to receive its Venture Capital Fellowships. Students are matched with 3-month summer internships at venture capital firms or their portfolio companies. The internship provides the MBA candidate with hands-on experience in the world of new venture creation and management. The Fellowships are awarded only to first year Haas MBA candidates or first year Haas evening MBA program participants who have superior qualifications and strong interest in venture capital industry. A panel of faculty and advisors with venture capital experience named each year by the Lester Center judge the applications. Example internship projects include: due diligence; primary market research; competitive research for portfolio firms, product development plans; and business planning.
<http://entrepreneurship.berkeley.edu/venture.asp>
 - Mayfield Fellows Program*. Paid summer internships at venture capital-funded Silicon Valley high tech start-ups are made available to up to 12 graduate students at UC Berkeley. <http://mot.berkeley.edu/intro.html>
- *Venture Capital Executive Program (Custom)*. The Venture Capital Executive program is currently available as a custom program. This program was designed by experts and experienced venture capitalists to train executives in the art of venture investing. As a participant in the Venture Capital Executive Program you will get direct hands-on exposure to the process of venture creation, investing and rapid-growth. You will learn how fast-changing technology, increasing competition, global complexity, and compressed time cycles work together to create the opportunity that venture-funded businesses exploit.
<http://execdev.haas.berkeley.edu/>

B. Distinctive Regional University Entrepreneurship Programs

The eight programs in this section were selected as highly relevant benchmarks as they have characteristics similar to Michigan universities. The following chart indicates the selection criteria and the benchmark universities that represent each criterion.

	Ball State University	Bradley University	DePaul University	Georgia State University	San Diego State University	University of Michigan	University of North Carolina	Wake Forest University
Geography – Midwest	X	X	X			X		
Metropolitan VS Non-Metropolitan	Non-Metro	Non-Metro	Metro	Metro	Metro	Non-Metro	Non-Metro	Non-Metro
Diverse Minority Student Population			X	X	X			
Teaching University	X	X	X					X
Undergraduate Emphasis	X	X						
Commuter Programs			X					
Part-time MBA Program			X		X	X		X
Size - Under 15,000		X						X
Size - 15,000 to 25,000	X		X					
Size - Over 25,000				X	X	X	X	

Their ranking by U.S. News and World Report is indicated, if relevant. The eight programs, appearing alphabetically, are:

- Ball State University
- Bradley University
- DePaul University (Kellstadt Graduate School of Business) (IL) (#26)
- Georgia State University
- San Diego State University (#20)
- University of Michigan Zell Lurie Institute (#11)
- University of North Carolina – Chapel Hill (Kenan-Flagler) (#22)
- Wake Forest University – Babcock Graduate School of Management

Ball State University

<http://www.bsu.edu/management/options/entmgt/>

- **Entrepreneurship Education Overview:** Consistently ranked among the top 25 entrepreneurship programs at both the undergraduate and graduate levels by US News and World Report, SUCCESS, and Business Week. Students in the *Entrepreneurship and Small Business Management Program* will learn to prepare for the challenges involved in new venture creation and small business management. The emphasis of this nationally ranked program is the recognition of opportunities and the conversion of new ideas into business plans with a focus on implementation. New business development, small business management, franchising, family business, and corporate entrepreneurship are all areas of study within this major. The program is designed to help people understand risk and develop an entrepreneurial perspective by overcoming challenges and achieving success.
 - *The Institute for Entrepreneurship.* The major purpose of the Institute for Entrepreneurship is to provide the Midwest with a research and development center that focuses on the development and growth of entrepreneurial ventures. Research is conducted, analyzed, and published in some of the leading academic and practitioner journals in the entrepreneurship field. The Institute provides the needed link to enhancing entrepreneurs and business development for the Midwest's future by conducting active and applied research, assessment

and analytical activities of entrepreneurs, corporate entrepreneurs, and entrepreneurial ventures. The Institute contains the entrepreneurship academic programs.

- **Entrepreneurship Activities**

- Many of the entrepreneurship activities occur within the **Midwest Entrepreneurial Education Center (MEEC)**. The MEEC is the training and development facility of the nationally ranked Entrepreneurship Program at Ball State University. Its mission is to develop the entrepreneurial perspective in individuals at the youth, collegiate, and adult levels, and develop an entrepreneurial environment throughout the Midwest. Its mission and vision are supported by the following core values:
 - Dedication to scholarship through the pursuit and dissemination of entrepreneurial research
 - Uncompromising commitment to provide clients quality entrepreneurial education
 - Develop the entrepreneurial perspective with passion in all programs
 - Empower employees to take ownership of programs and initiatives

Specific activities of the MEEC:

- *Corporate Entrepreneurship and Innovation*. Corporate Entrepreneurship Training is an intensive training seminar involving the development of managers' entrepreneurial abilities within existing corporations. The major thrust of this program is to enhance the creative and innovative potential of managers and their environments for fast growing companies throughout the Midwest. Emphasis throughout the program is placed on energizing and reinventing the organization through enhanced customer service, new product development, and diversification projects.
- *The Midwest Entrepreneurial Education Center* consults with universities and colleges across the country. With two decades of experience, the Center aids in developing entrepreneurial curriculum, programs, and centers.
- *The National Consortium of Entrepreneurship Centers*. Formulated and developed over the past five years through the Kauffman Foundation, the goal of the Consortium is to create and facilitate collaboration across the nation's entrepreneurship centers. Its administrative home is Ball State University. <http://www.nationalconsortium.org/mission.html>
- *Enterprise Creation Competition*. This event gives undergraduate students the opportunity to develop business ventures that demonstrate the ability to be successfully launched. These ventures can be start-ups, buyouts, expansions of existing companies, or site-specific franchises.
- *ACE-Net -- The Angel Capital Electronic Network*. The ACE-Net is a nationwide Internet-based listing service which provides information to angel investors on small, dynamic, growing businesses seeking \$250,000 to \$5 million in equity financing. Regional Midwest investors and entrepreneurs wishing to participate in ACE-Net subscribe through the Midwest Entrepreneurial Education Center
- *YESS! Mini-Society*. YESS! (Youth Empowerment and Self-Sufficiency) Mini-Society is an experience based, interdisciplinary approach used to teach youth ages 8-12 about entrepreneurship. The curriculum enhances core subject areas, and encourages the exploration of personal values. The Center offers teacher training seminars on implementation techniques of curriculum, four teaching modules, and stipends used for costs of the program.

- *EntrePrep*. EntrePrep is a program for high school juniors. It is designed to provide the fundamental concepts and skills for becoming an entrepreneur. It also offers internship experiences with start-up businesses and helps students explore the process of evaluating and making recommendations to new ventures. With successful completion of the EntrePrep program, participants receive a \$1000 scholarship for the college or university of his/her choice.
- *Mother and Daughter Entrepreneurs in Teams (MADE-IT)*. MADE-IT is a program for helping 7th grade girls establish business partnerships with their mothers. It is designed to provide teams with entrepreneurship knowledge and skills to identify business opportunities, create a business plan, and initiate a business venture. The goal is to help launch a business and have the profits be used for the daughter's college education.
- *Dane A. Miller Entrepreneurial Leadership Series*. An annual 1/2-day seminar featuring "Entrepreneur of the Year" recipients from the state of Indiana, prolific CEO's from NASDAQ companies, and other entrepreneurial leaders.
- *Women Entrepreneurs Program*. This specialized program, delivered by successful women, concentrates on the planning, organizing, evaluating, and creation of a viable business venture. Through a special guidebook entitled, The Entrepreneurial Decision, idea creation, business plan development, and action plan steps are developed.

Bradley University

<http://www.bradley.edu/turnercenter/home.html>

- **Entrepreneurship Education Overview:** The **Turner Center for Entrepreneurship** is a not-for-profit program located at Bradley University. The centers which make up the Turner Center for Entrepreneurship provide business counseling, technical assistance, training, and educational activities for individuals interested in owning their own businesses. We also help existing entrepreneurs and businesses wanting to expand or take advantage of new opportunities and technologies, are interested in marketing their products and services internationally, or are seeking to commercialize new products and technologies.
- **Entrepreneurship Activities**
 - *Small Business Development Center (SBDC)*. For over 15 years, the SBDC at the Turner Center for Entrepreneurship has provided business counseling and support to entrepreneurs and existing businesses. This is done this by providing businesses with the resources needed to solve business-related problems and take advantage of new opportunities. They have assisted over 200 companies to obtain loans in excess of \$2.8 million to start or expand their businesses, which have created or retained more than 1,300 jobs. Services include:
 - Management and technical assistance
 - Education and training for existing businesses
 - Education and training for new businesses
 - Business planning and tax seminars
 - Market research
 - Business plans
 - Financial projections
 - <http://www.bradley.edu/turnercenter/sbdc.html>

- *International Trade Center.* Since 1989, the ITC has helped hundreds of Illinois companies take advantage of the potential of the international marketplace. The ITC expanded in 1994 to include the **NAFTA Opportunity Center** – one of only two in the state with a focus on Canada and Mexico. We help manufacturing and service companies make the right move at the right time. Working together, more than 500 companies have expanded their export sales by more than \$80 million. Services include:
 - Assessing company readiness to export
 - Identifying potential export markets
 - Identifying potential foreign buyers
 - Assisting with foreign market entry
 - International business planning
 - Export document training
 - Trade-lead matching from U.S. Embassies
 - Education and networking forums
 - Executive courses in international business
 - Export finance options
 - In-house training
 - <http://www.bradley.edu/turnercenter/itcnoc.html>

- *Business and Industry Data Center (BIDC)* is a source for statistical data and economic analysis for small businesses, to help plan, market, manage, and expand their companies. The BIDC is a local affiliate of a statewide network of data centers designed to meet the demand for effective economic statistics. We provide basic census, economic, and demographic information, as well as technical assistance in basic data interpretation.
<http://www.bradley.edu/turnercenter/bidc.html>

- *Senior Consulting Projects* is Bradley's oldest business assistance program. Thousands of businesses and not-for-profit organizations have utilized teams of business students and faculty in the Foster College of Business Administration as consultants on a wide variety of business-related projects, including market research, business expansion, and organizational and operational issues. These semester-long projects are completed, at no cost to the client and conclude with a formal presentation of the team's written report, which includes their findings, analysis, and recommendations.

- *Senior International Consulting Project.* In partnership with the Foster College of Business Administration, each year during the fall semester, businesses interested in entering or expanding their sales through exporting are selected to participate in the *Senior International Consulting Project*. The projects are designed to assist businesses in developing comprehensive international marketing plans. The international marketing plans include the analysis of potential foreign markets, alternate forms of entering these markets, and the cost/benefit of entering or expanding exporting activities.

The projects require two semesters and conclude at the end of the spring semester with a presentation of the team's written report. There is a nominal fee for this program to help offset expenses.

- *eBusiness Center* provides assistance to new and existing small businesses in defining eBusiness opportunities for the company to implement. This includes planning a web site, e-commerce, sales force automation, customer relationship management over the Internet, and using other Internet technologies to enhance a business. Services include:

- Seminars to demonstrate uses of technology for businesses
- Planning a web site (a new site or additions to your existing site)
- Web site evaluation
- Information about new technology and products
- eBusiness implementation strategies
- <http://www.bradley.edu/turnercenter/ebus.html>

DePaul University (Kellstadt Graduate School of Business) (IL) (#26)

<http://ent.depaul.edu/>

The DePaul Kellstadt Graduate School of Business is ranked by U.S. News & World Report's "Best Graduate Schools" (2003 Guide) as fourth for its part-time MBA program for the second year in a row. This is the fourth consecutive year that the part-time program placed in the Top Five and the eighth straight year it earned a spot among the Top 10.

- **Entrepreneurship Education Overview:** Through the Entrepreneurship Program, DePaul University offers a nationally recognized program where one can become proficient in self-employment skills. It is not only geared toward independent career goals, but also provides an opportunity to develop a customized business plan with professional assistance. Kellstadt is ranked No. 4 in SUCCESS magazine's list of Top 50 Business Schools for Entrepreneurs.
- **Entrepreneurship Activities**
 - *Private Enterprise Network (PEN).* The PEN Symposium was created to assist entrepreneurial firms in the Chicago area in their growth processes. PEN is a formal symposium where an emerging entrepreneurial business is chosen to present its business plan and gain feedback from a panel of selected business experts and an audience of professionals. Its goal is to highlight growing businesses seeking second round financing, assisting entrepreneurial firms in the Chicago area in their growth processes.
 - *Internships.* The Entrepreneurship Program fosters two types of internships for undergraduate students: 1) ICS 394 – (for seniors). In this course, a team of students works together with an entrepreneur or small business in the community. The team will tackle general management problems integrating marketing, accounting, finance, and management functions. They will analyze these challenges from the perspective of the CEO or entrepreneur concerned with a start-up or the planning of a new venture. 2) Internships with small companies or entrepreneurs are also available, with or without course credit, through the Management Department Internship Program.
 - *Interdisciplinary Course Development.* Dr. Harold Welsch, the Coleman Endowed Chair in Entrepreneurship, received a \$5,000 service-learning grant from the Public Service Council of DePaul's Office of Academic Affairs to establish a program on technology commercialization. The starting point will be a graduate course combining technical support from the College of Computer Science, business support from the College of Commerce, and intellectual property protection support from the Law School. Welsch said, "Essentially, it is an interdisciplinary program to start technology-based ventures."
 - *Business Advising.* Many companies just starting out – and sometimes those small businesses that have been operating for quite some time – require assistance. The Entrepreneurship Program offers Business Advising to start-ups, family owned business, and small companies through our roster of business leaders and DePaul Faculty.

Georgia State University

<http://www.cba.gsu.edu/rec/aboutcenter.htm>

- **Entrepreneurship Education Overview:** The **Herman J. Russell, Sr. International Center for Entrepreneurship** is dedicated to improving the chances of success for 21st century entrepreneurs. The Robinson College of Business has been ranked among the top schools in the nation for entrepreneurship, according to Entrepreneur magazine's first ever list of the "Top 100 Entrepreneurial Colleges and Universities (April 2003)." (<http://www.entrepreneur.com/mag/0.4430..00.html>) The magazine researched more than 700 collegiate entrepreneurship programs throughout the country and divided them into national and regional schools. The Russell Center is listed as *one of 13 "first tier" programs at regional universities nationwide*. The Center has three areas of activity with approximately equal priority: degree programs, worldwide knowledge creation, and engagement in the community. Degree programs for students include graduate courses leading to a concentration in entrepreneurship or a career path in international entrepreneurship for MBA students. In addition there are a number of undergraduate courses. All courses balance theory with practical experience, with the result that students are well prepared for the excitement and the risks of creating and managing a new business. Scholarships are available to many of entrepreneurship students.

- **Entrepreneurship Activities**
 - *The Russell Entrepreneurship Center* derives excellence through synergies achieved by integrating its programs with the Robinson College's Institute of International Business and its eCommerce Institute. In addition, the Russell Center benefits from work with the Zwerner Chair of Entrepreneurship and Family Business and the Ramsey Chair of Private Enterprise (established in 1967 and the first academic chair in the United States focused on studying entrepreneurship).
 - *The Moses Lee Reid Entrepreneurship Award*. This award for \$5,000 is for an excellent entrepreneurial business concept awarded to students in the J. Mack Robinson College of Business.
 - *Society of Entrepreneurs*. The community of entrepreneurs is engaged through the Society of Entrepreneurs. It serves as portal into Georgia State University for Atlanta's successful innovators and growth-oriented companies. Members of the Society meet monthly for educational programs, speak to students in the classes, serve as judges of student business plan competitions, and provide sites for student entrepreneur internships.
 - *Small Business Development Center*. The SBDC was established in 1979 to serve small businesses in the Atlanta area through one-on-one consulting, educational programs, and information services. The SBDC offers assistance to entrepreneurs at all stages of their company's growth. Housed within one of the ten largest schools of business in the country, the Small Business Development Center uses the expertise of Georgia State University faculty as well as Atlanta business professionals.

San Diego State University (#20)

<http://www-rohan.sdsu.edu/dept/emc/>

- **Entrepreneurship Education Overview:** San Diego State University's Entrepreneurial Management Center (EMC) is dedicated to providing the regional entrepreneurial community with tools and skills necessary for venture creation and growth. SDSU offers full and part-time programs in Entrepreneurship at the graduate level, and coursework in Entrepreneurship at the undergraduate level within SDSU's College of Business. The privately-funded Center promotes better knowledge and understanding of the entrepreneurial process through experiential learning. As a result of the EMC's efforts, SDSU's College of Business is recognized as a top-ranked business school for entrepreneurs by both SUCCESS magazine and US News & World Report. SDSU's Entrepreneurial Management Center is also a Nasdaq Center of Entrepreneurial Excellence and was also awarded the USASBE (United States Association for Small Business and Entrepreneurship) 1999 Model Program in Entrepreneurship. A gift from QUALCOMM is also enabling the development of new entrepreneurship curriculum, which includes expanding to distance learning courses and expanding the Entrepreneur-in-Residence program. The program will offer "clusters," or spheres of entrepreneurial interest areas, to provide students with career paths in entrepreneurship. The four clusters include technology commercialization, social entrepreneurship, service entrepreneurship, and venture capital and private equity financing.
- **Entrepreneurship Activities**
 - *Research Program.* Developing and implementing a sophisticated entrepreneurship research program is an important Entrepreneurial Management Center strategic initiative supported by a recent \$3 million gift from QUALCOMM, Inc. Use of the Internet will promote in-depth, accessible research and analysis of trends and conditions affecting the local business community to serve as a resource for information on San Diego-based industry clusters.
 - *Venture Challenge.* A student business plan competition, Venture Challenge provides students seeking venture capital for their entrepreneurial ideas to present their business plans before a distinguished panel of experts. The international event draws top students teams to compete with SDSU's best. This unique program embodies the spirit of entrepreneurship and is a driving force for innovation, which in turn contributes to economic growth.
 - *QUALCOMM EMC Entrepreneur Internship Program.* Student internships are integral to the MBA program in entrepreneurship at San Diego State University. Since 1998, the Entrepreneurial Management Center has facilitated the placement of MBA interns with over 75 emerging growth companies, venture capital firms, service and non-profit organizations in the entrepreneurial sector. Originally launched with a grant from the Ewing Marion Kauffman Foundation for Entrepreneurship, the EMC's intern programs give students hands-on experience to critical issues faced by entrepreneurial organizations. Interns are able to build problem solving techniques as they manage a wide range of projects in a variety of industries, including high-tech, biotech, financial services, telecommunications, electronics, entertainment, tourism, and the non-profit sector.
 - *Entrepreneur Society.* The Entrepreneurial Society at SDSU provides a forum for students, faculty, industry, and government to exchange ideas and forum relationships that will foster entrepreneurship in the local community. ES embraces entrepreneurship as the foundation of a prosperous modern economy, and assists members to gain practical entrepreneurial experience while instilling the innovative and adventuresome attitude that forms the spirit of entrepreneurship. Goals of the Entrepreneur Society:

- To bring together SDSU students with an interest in entrepreneurship
 - To produce special events related to entrepreneurship
 - To address curriculum issues related to entrepreneurship
 - To define and market the entrepreneur program to future students
 - To identify essential entrepreneurial skills
 - To establish and maintain external relations with faculty, administration, industry, government and the local community
 - To provide a network for forming entrepreneurial ventures
- *Center for Commercialization of Advanced Technologies (CCAT).* The (CCAT) project is a partnership between SDSU, UCSD, ORINCON, the Space and Naval Warfare Systems Center San Diego, and the Department of Defense. It brings agencies together to accelerate the development and application of advanced technologies to solve real-world problems through administering a \$5.2 million DOD sponsored technology commercialization program. The CCAT program is designed to fast-track Department of Defense, industry and academic technologies into commercial and/or defense related markets. New technological ideas are identified for use in addressing an issue of national concern. Experts from the Jacobs School of Engineering at UCSD, defense contractor ORINCON Industries, and the Space and Naval Warfare Systems Center then evaluate a new technology concept to see if it has technical merits. Students and faculty from the EMC and other College of Business Administration departments oversee the market analyses to determine commercial value for the new concepts. Subject technologies may lead to new start-up ventures or be transitioned into existing companies. CCAT offers following services at no cost for selected technologies:
- Commercial Feasibility Studies
 - Prototype Development, Test & Evaluation Funding
 - Research & Development Funding
 - Market Analysis Studies
 - Business Plan Development
 - Venture Finance Connectivity
 - DOD Acquisition Assistance

<http://www-rohan.sdsu.edu/dept/emc/CCAT/index.htm>

- *Consulting Program.* The EMC offers regional entrepreneurs numerous services in their venture's growth and development, including a program that matches talented MBA interns with companies seeking to complete projects such as business plans, market research and feasibility studies; a resource library with over 500 business plans; a consulting and professional services provider referral service; and complimentary posting of job opportunities and/or special events. (Deemed appropriate and in accordance with the EMC's strategic objectives.)
- *Entrepreneurs in the Classroom.* This program provides a true value-added learning experience for SDSU MBA students. Local, national, as well as international entrepreneurs come and share their backgrounds, offer insight into the contemporary business environment, and discuss course concepts relevant to their own personal experiences. Student participation and interaction with the Entrepreneurs in the Classroom provide not only an inside view of basic business applications, but also give students networking opportunities, an appreciation of the San Diego as well as other regional economies, and a better understanding of critical factors for success. The EMC seeks interested entrepreneurs, venture capitalists, executives in an entrepreneurial setting, professional service providers and social agency administrators to discuss their experiences and participate in the Entrepreneur in the Classroom program.

- *The L. Robert Payne Distinguished Entrepreneur Lectureship Series.* This program brings an outstanding entrepreneur to SDSU each year to lecture and interact with students, faculty and invited representatives from the regional entrepreneurial sector. It was established in 1996 with a gift from SDSU alumnus Bob Payne, a successful entrepreneur and long-time supporter of the University.
- *Entrepreneurial Network.* A recently chartered official chapter of the University's Alumni Association that provides entrepreneurial alumni and friends the opportunity to be part of a sophisticated network that includes regional entrepreneurs, professional service providers and industry groups. Sponsored by SDSU's Alumni Association, EMC, and Entrepreneur Society, the Entrepreneurial Network is an exciting synergy between San Diego's innovative spirit and SDSU's strong tradition of developing talented business leaders. The core missions of the Network are to provide members with attractive networking forums, including meetings, events and an online community; to design compelling, exciting events with purpose and value; and to share our experiences with the next generation of entrepreneurs, such as SDSU's graduate student-run Entrepreneur Society.

University of Michigan Zell Lurie Institute (#11)

<http://www.zli.bus.umich.edu/>

- **Entrepreneurship Education Overview:** The University of Michigan Business School is widely regarded as one of the most innovative business schools in the world, known for having created a new standard in management education and development. That new standard is a product of blending a legacy of cutting-edge business knowledge creation and delivery with innovative, creative initiatives that produce results. Nowhere is this more important than in entrepreneurship. In 1999, the University of Michigan Business School established the *Samuel Zell and Robert H. Lurie Institute for Entrepreneurial Studies*. The Institute is an organization for existing and expanding efforts in entrepreneurship. Approximately sixteen faculty members, both academics and practitioners in the field of entrepreneurship, prepare students for turning knowledge into new venture success. In addition, the Institute offers symposia, internships, alumni networks, curriculum development and other activities to advance the interests of the entrepreneurial community.
- **Entrepreneurship Activities**
 - *Wolverine Venture Fund (WVF).* The WVF is a multi-million dollar venture capital fund operated directly out of the University of Michigan Business School. The Fund's investments are made with the active involvement of MBA students, with the assistance of faculty and an eight-member advisory board of professional venture capitalists and entrepreneurs. The WVF is the largest, most active University-based venture fund of its type in the country. The activities of the fund have been featured in numerous business publications, including *Business Week*. The WVF invests primarily in early stage, technology-oriented companies. It typically invests \$100,000 to \$200,000 in seed and first-stage funding rounds, in a syndicate with other venture capital funds and angel investors. The WVF prefers investments in companies that have a "Michigan affiliation," meaning these companies have a management team member who is a student, alumnus, or faculty member.
 - *Internships.* The Marcel Gani Internship Program is one of the largest of its kind in the country. The Institute recruits local and distant hosts to provide excellent experiential learning opportunities in start-up and venture capital firms. In order to make Michigan student talent more affordable, the internship program pays host

companies about half of each student's salary for the summer. Sixty-three students have completed internships with more than 40 host companies over the last three summers.

- *Multidisciplinary Action Project (MAP) Program.* MAP, started in 1991, is a project-based course where students analyze opportunities, problems and processes on-site in real business settings. EMAP are a handful of projects within the larger MAP effort. These EMAPs engage students with a sincere interest in entrepreneurship and provide opportunities for experience in less-defined, less-certain environments of start-up and high growth companies.
- *Dare to Dream Student Grant Competition.* The Dare to Dream Grant Competition is an opportunity made possible through the generous support of the Community Foundation for Southeastern Michigan. The competition objective is to support viable student-led businesses that intend to begin or continue operations in Southeastern Michigan. The award money, administered by the Institute, is available for student teams to validate their business concepts and/or to commence operations. Each business must have a UMBS student on the executive team. For the 2002 calendar year there were 34 applications received, the judges selected 8 student businesses to receive funding; a total of \$105,000 was awarded. Once awards are made, these fledgling businesses are in need of professional advice and mentorship in many areas including financial planning, marketing, and general management.
- *Business Plan Competitions.* The Institute sponsors at least two UMBS competitions each academic year. The Business Innovators Pitch Competition, co-sponsored by the EVC Club, is held in January – this is "fast-pitch" format that makes students think and present on their feet. The 20-year-old Pryor-Hale Business Plan Competition, a traditional format that pits student business plans against on another, is held in February. In addition, Institute encourages and sponsors Michigan students to compete at intercollegiate business plan competitions at other Universities. Fifteen different competitions have been identified and occur from February through May. Teams benefit from professional coaching, functional expertise and mentorship.
- *Center for Venture Capital and Private Equity Finance (CVP).* The mission of the Center is to expand, leverage and disseminate its core knowledge of entrepreneurial finance, venture capital and private equity investment for the benefit of its constituent community. <http://www.umich.edu/~cvpumbs>
- *Entrepreneur and Venture Capital Club (EVC).* The EVC supports a set of activities that promote networking with potential employers and entrepreneurial alumni. <http://www.evc-club.com/>

University of North Carolina – Chapel Hill (Kenan-Flagler) (#22)

<http://www.cetv.unc.edu/>

- **Entrepreneurship Education Overview:** The Center for Entrepreneurship and Technology Venturing (CETV) capitalizes on North Carolina's expanding entrepreneurial community and its strength in new technology development. It plays an important role in the full spectrum of economic development and job creation initiatives, including addressing inner-city challenges through prototype Urban Enterprise Program and revitalizing major companies through commercialization of intellectual assets. The Center is bringing university research breakthroughs to the marketplace through technology transfer initiatives, including disclosure and patent-filing activities to ensure the University shares the economic rewards from ventures it helps launch. The Center is also assisting

the creation and growth of new ventures by providing educational programs, faculty research, and student employment in experiential learning programs.

- **Entrepreneurship Activities**

- *Venture Capital Investment Competition.* The VCIC® is the nation's premiere strategy competition for venture-minded and entrepreneurial MBA students. This one-of-a-kind competition gives students from top business schools a real-world venture capitalist experience – student teams interact with real CEOs from real companies with real business plans. Unlike other competitions where teams lock themselves away to mull over theoretical or historical scenarios, the VCIC® experience exposes students to a variety of activities that ultimately must be integrated into a cohesive investment strategy to be pitched to real venture capitalists. Many students hail the VCIC® as the most valuable learning experience of their MBA careers.
- *Carolina Entrepreneurship Club.* This club is a dynamic organization at the University of North Carolina at Chapel Hill dedicated to providing entrepreneurial education to and encouraging entrepreneurship among UNC-CH students. The Carolina Entrepreneurship Club provides both undergraduate and graduate students across all disciplines and other members of the Carolina community the opportunity to acquire entrepreneurial skills, network with experienced entrepreneurs and business owners, and interact with fellow students. Events include our Speaker Series, Business Roundtables, topic-specific workshops, and onsite field trips.
 - *Speaker Series:* Approximately every other week the E-ship club invites a member of the entrepreneurial community to speak to students during the lunch hour (lunch provided by CETV). Jeff Reid facilitates the discussion by asking informal questions about the speaker's background. Students are encouraged to ask questions.
 - *Mentor Program:* This new program for the fall of 2002 is aimed at connecting students directly with members of the local entrepreneurial community. Each student will be assigned a mentor, and the two will be treated to a free meal courtesy of the E-Ship Club. It is hoped that in many cases this meeting will be the start of a mutually rewarding relationship.
 - *E-Ship Summer Scholarships:* E-Ship Summer Scholarships allow students who choose entrepreneurial internships to supplement their salary. These scholarships are available to club members who receive an entrepreneurial internship that pays less than \$5,000 for the summer. Scholarships range from \$500 to \$5000 depending on participation in the club, type of internship and level of compensation. Students who receive scholarships are required to write a report and participate in open discussions about their internships along with participating in other club activities. This program is funded by the sale of coursepacks.
- *Carolina/Kauffman Social Entrepreneur Internship Program (CKSEIP).* The objective of the CKSEIP is to provide students with an experience-based learning opportunity by placing them in new and emerging social enterprises, such that they can minimize future costly on-the-job-training by learning from excellent leaders/mentors. Social internships are designed for students considering the prospect of using their entrepreneurial energies to serve a social mission. The CKSEIP will help match students and companies that share an interest in social entrepreneurship, and will subsidize summer stipends paid to the students. The

grant pays up to \$2,000 of the internship salary. The hiring organization must provide at least \$2,000 in matching funds but can pay more.

- *Venture 2003*. Celebrating its 20th anniversary, CED's annual venture conference is nationally recognized as the Southeast's largest and most dynamic venture financing conference. Venture 2003 will demonstrate the unique elements of the Research Triangle's business environment, including the collaboration among top Universities – UNC, Duke & NC State; exceptional entrepreneurial experience, vision and management talent; and corporate research & development. Together, these elements have created an environment ripe for high-growth company formation, growth and success, and Venture 2003 is the place to see it all.
- *Venture Capital Club*. Carolina Venture Fellows Program provides exceptional individuals with unique learning opportunities and first-hand experience with venture fund managers, industry experts, and entrepreneurs who are seeking investment capital. A select group of MBA students is selected every year and placed within a venture firm where they learn through observation and hands-on experience. Students learn to evaluate business plans, structure term sheets, and help portfolio companies successfully achieve multiple rounds of funding, growth, and exit.
- *The Entrepreneurial Law Association (ELA)*. ELA is the first student-run organization in the country dedicated to promoting entrepreneurship and community development by providing pro-bono legal services to local entrepreneurs and start-ups while fostering educational opportunities for law students.

Wake Forest University – Babcock Graduate School of Management

<http://www.mba.wfu.edu/ace/>

- **Entrepreneurship Education Overview:** The *Angell Center for Entrepreneurship's* mission is to unite the talents of entrepreneurs, students, and faculty as stewards in the pursuit of excellence within entrepreneurial outreach, curriculum and research. The Center is a partner, driving force and leader of innovation in the region's business community and a resource for students and area businesses that are striving to reach the top of their fields. The Angell Center took first place in the National Model MBA Program during the U.S. Association for Small Business and Entrepreneurship (USASBE) annual conference on Jan. 26, 2003 in Hilton Head, SC. It was also one of five programs selected by the National Consortium of Entrepreneurship Centers as a Nasdaq Entrepreneurial Center of Excellence (September 2001), and was ranked No. 22 among the top 50 MBA programs in entrepreneurship by Success magazine (February/March 2001). Babcock Graduate School of Management is tied for No. 46 nationally in the most recent survey of the U.S. News & World Report (2002), and ranks No. 26 among all private business schools in the survey. Business Week magazine ranks Babcock's full-time MBA program among the top 50, and the Wall Street Journal ranked it No. 23 among the world's top 50 business schools in its second annual survey of corporate recruiters.
- **Entrepreneurship Activities**
 - *Babcock Demon Incubator (BDI)*. Operating under the Angell Center for Entrepreneurship, the incubator's mission is to foster entrepreneurial education at Wake Forest and an entrepreneurial spirit in the Triad by providing personalized services and relationships to growth-oriented, early stage ventures. The incubator offers office space and Internet access for growing businesses. It will

house three to five start-up businesses, with tenants admitted on a rolling basis throughout the year. Each business that enters the incubator will have approximately 12 months to grow and find a permanent location. The goal for the incubator is to launch businesses that have the potential to create significant economic impact in the Triad through jobs and business investment. Among the businesses to be housed in the incubator will be winners of the Triad Entrepreneurial Initiative's annual business plan competition. The BDI is developing into a premier university-based incubator with its own unique business model. In addition to playing an instrumental role in helping launch new ventures, the BDI serves as a living laboratory for students and faculty.
<http://www.mba.wfu.edu/incubator/>.

- *Family Business Center.* Established in 1999 by the Angell Center for Entrepreneurship, the Center uses the capabilities and educational resources available at Wake Forest, and in the community and beyond to provide closely held and family firms the assistance they need to grow and succeed from generation to generation. Most successful closely held and family firms seek outside expertise and regularly attend seminars to learn how to handle critical issues. The Family Business Center provides these resources. By learning and sharing concerns with others who face similar situations, members gain new perspectives on how to handle critical issues, such as:
 - Conflict management
 - Estate, tax and other financial planning
 - Succession planning
 - Transfer of ownership
 - Development of boards of advisers/directors
 - Intergenerational issues
 - Family vs. non-family employees
 - Communication and teamwork
 - Strategies for successful growth
- *Summer Entrepreneurial Internships.* Internships provide students with first hand experience by allowing them to work directly with entrepreneurs and venture capitalists. In 2001, Babcock added three internships within the social entrepreneurship domain. Interns receive course credit upon completion of an original teaching case with teaching notes based on their experience — a requirement that helps students bridge the theory-to-practice gap that can exist in MBA programs. Funding is provided through company support and by contributions from the Price Institute for Entrepreneurial Studies, the Angell Foundation and the Ewing Marion Kauffman Foundation. Program participation has grown to 16 interns and five faculty advisors.
- *Babcock Elevator Competition.* This exciting national business plan competition literally takes student entrepreneurs from the ground floor to the boardroom. Staged at Wachovia Bank, teams present their plans to venture capitalists during two, two-minute elevator rides. The top six teams advance to full presentations made to an expanded group of venture capitalists. Winners receive a return trip to present their plans to a venture capital partnership group appropriate for their venture funding. More than 25 teams competed in the 2003 event.
- *Kauffman/Angell Center for Entrepreneurship (KACE) National Case-Writing Competition.* KACE is an outgrowth of Babcock's successful teaching case competition. Students prepare original teaching cases with teaching notes based on their summer internships. The inaugural competition, funded by the Ewing Marion Kauffman Foundation, was held in January 2001. Participating schools included Harvard, Northwestern, Notre Dame, Chicago, Michigan, Nebraska and Wake Forest. The winning case was from Northwestern. The competition was the

winner of the Irwin-McGraw-Hill Innovation in Entrepreneurship Pedagogy Award, presented by the Academy of Management.

- *Medical Technology Transfer.* This program includes summer entrepreneurial internships (11 in last three years), Management Consulting Practicum projects (8 in last three years) and special initiatives such as FastTrac Tech (a 12-week program for individuals who want to launch new technology-based ventures). The Angell Center's relationship with the WFU Office of Technology Asset Management is excellent, and we continue to intensify our contributions to the commercialization of their inventions.
- *Babcock Entrepreneurial Fellows.* Fellows are 30 professional (or "serial") entrepreneurs, venture capitalists, angel investors, service providers and chief executive officers. Fellows support the mission of the Angell Center by:
 - Enabling entrepreneurs and service providers to support specific Angell Center initiatives
 - Serving as a resource for classroom discussions and student-focused activities
 - Supporting (as mentors, advisers, investors, etc.) students, alumni, and individuals who are embarking on entrepreneurial activities

During 2000-2001, Fellows contributed by:

- Playing an integral role in the start-up of two student-led and three alumni-led organizations
- Serving as mentors to more than 50 students
- Participating in 33 classes as visiting lecturers
- Offering their organizations as sites for 13 entrepreneurial internships
- Judging business plan and case writing competitions
- Team teaching a course in entrepreneurship
- *Babcock Entrepreneurs.* More than one-third of Babcock's full-time students are members of this student organization. Activities are extensive and include Babcock Entrepreneur's Roundtable, speaker series, company visits, attendance at conferences and participation in venture capital competitions. The Angell Center provides financial support from funds received through a Small Business and Technology Development grant.
- *Fast Trac Tech.* The Council for Entrepreneurial Development designed this 12-week program for individuals who want to launch new technology-based ventures. Attendance has included employees, students and faculty from Wake Forest University Baptist Medical Center, R.J. Reynolds Tobacco Company and Procter and Gamble. Classes were held at Babcock and led by area entrepreneurs, medical school personnel, service providers, Babcock Entrepreneurial Fellows and executive/adjunct faculty.
- *Triad Entrepreneurial Initiative.* The Winston-Salem Alliance is providing \$1.1 million during the next three years to fund a comprehensive program to develop an entrepreneurial culture within the North Carolina Piedmont Triad (Winston-Salem, Greensboro, High Point). The Angell Center plays a significant role in this initiative by providing educational, mentoring and incubation programs for nascent entrepreneurs.
- *Venture capital and angel investor projects.* We provide student assistance to angel investor groups, North Carolina venture capital firms and their portfolio companies. This initiative has resulted in projects that offer great experience for students to interact with high-tech businesses and their financial backers.

- *Social Entrepreneurship Initiative.* This innovative program harnesses the resources of the Wake Forest University in partnership with local non-profit agencies to build bridges in the Winston-Salem community. Social entrepreneurship programs will enhance the ability of local non-profit organizations to be innovative in serving their constituencies.
- *Kauffman Center for Entrepreneurial Leadership Scholarships*

C. Michigan Public University Entrepreneurship Programs

The business programs in this section were selected as representative of the broad array of entrepreneurship education offerings among Michigan's 15 public universities. The extent to which courses, majors/minors, graduate concentrations, and entrepreneurship centers have been developed differ widely. This development has depended on a variety of factors: size, student demographics, funding, faculty interest, relationship with area Smart Zones, etc. Note that the Great Lakes Entrepreneur's Quest (<http://www.gleg.org/>) is open to all Michigan students.

- Central Michigan University
- Eastern Michigan University
- Ferris State University
- Grand Valley State University
- Michigan State University
- Michigan Technology University
- Northern Michigan University
- Oakland University
- University of Michigan

Central Michigan University – College of Business Administration

<http://www.cba.cmich.edu/>

- **Entrepreneurship Education Overview.** The College of Business offers entrepreneurship as one of seven concentrations in the BBA program. Entrepreneurship majors are not required to take College of Business Administration core classes, which deal mainly with large Fortune 500 companies. An internship is required. There is also a Practicum in Entrepreneurship offered through the Small Business Institute (http://www.cba.cmich.edu/lec/small_business_institute.htm), part of the **LaBelle Entrepreneurship Center**. An entrepreneurship minor is offered for non-business students only. The MBA program does not include an entrepreneurship concentration.
- **Entrepreneurship Activities**
 - **The LaBelle Entrepreneurial Center** (<http://www.cba.cmich.edu/lec/>) is part of the College of Business and is a focal point for new business development and educational activities related to entrepreneurship and small business development and management. The LaBelle Entrepreneurial Center is devoted to synergistically unite CMU students and faculty, current and potential small business owners and other business educators in central and northern Michigan, in a learning partnership for the mutual benefit of all.
 - The LEC offers training and educational programs, consulting services, and publications, and sponsors speaker series. The LEC provides specialized

programs for women business owners, minorities, veterans, persons with disabilities, international trade, and rural development. A series of institutes is under development for: Entrepreneurs with Disabilities, Native American Entrepreneurs, Minority Entrepreneurship, International Entrepreneurship, and Intrapreneurship

- o Student club: Students in Free Enterprise (SIFE)

Eastern Michigan University – College of Business

<http://www.cob.emich.edu/>

- **Entrepreneurship Education Overview.** Undergraduates can major or minor in Entrepreneurship. The Entrepreneurship curriculum uses an innovative sequence of courses designed to give the undergraduate student an in-depth understanding and appreciation of new-venture creation and growth management. These courses provide the needed basic concepts and help develop skills while exposing students to best practices in various functional areas. Students need not be enrolled in the College of Business to minor in entrepreneurship. At the graduate level there is a Certificate in Entrepreneurship Studies for non-MBA students and an MBA concentration in Entrepreneurship. Both undergraduate and graduate students participate in Field Studies in Entrepreneurship, which places student teams into entrepreneurial firms.
- **Entrepreneurship Activities**
 - o **Center for Entrepreneurship** (<http://www.emich.edu/public/cob/entrepreneur/>) was founded in 2000 with an endowment of approximately \$1 million. It sponsors a speaker series, Entrepreneurship Club, and a Hall of Fame honoring local entrepreneurs.
 - o Small Business Administration's (SBA) Region 9 (serving Wayne and Monroe counties) is housed at the EMU College of Business.
 - o Ypsilanti Smart Zone office (part of the Ann Arbor IT Zone) is also housed there.

Ferris State University – College of Business

<http://www.ferris.edu/cob/>

- **Entrepreneurship Education Overview:** Ferris State offers a BS in Small Business and Entrepreneurship, and Certificate in Small Business Management. This program is designed to provide potential small-business owners and managers with the knowledge and skills to operate a successful business. More than half of the program's courses relate to managing a small business, including accounting, finance, marketing, human resource management, economics, computer systems and law. In addition to management knowledge and skills, the program offers the chance to explore entrepreneurial opportunities. To gain practical knowledge, students visit and interview small business owners, and can participate in Ferris' cooperative business program, earning University credit while gaining work experience.

Grand Valley State University – Seidman School of Business

<http://www.gvsu.edu/ssb>

- **Entrepreneurship Education Overview.** Undergraduate and graduate courses in entrepreneurship are offered but there are no formal concentrations. Within the school are the Family Owned Business Institute (<http://fobi.gvsu.edu/fobi/index.cfm>) and the Center for Entrepreneurship.
- **Entrepreneurship Activities**
 - **Center for Entrepreneurship** (<http://www.gvsu.edu/ssb/Entrepreneurship/>) fosters interaction with the state and local community through its sponsorship and co-management of Great Lakes Entrepreneur's Quest, sponsorship of various workshops and seminars, and through coordination of programs with other local business organizations. The center is a catalyst in the cross-disciplinary development of research and curriculum throughout the university serving to bring business and non-business faculty and students together to foster the transfer of ideas into commercialized ventures. In this regard, the center is supported and coordinated with the local and state offices of the SBDC.
 - Entrepreneurship Club Collegiate Entrepreneurs Organization (CEO) informs, supports, and inspires GVSU students to be entrepreneurial and seek opportunity through enterprise creation.

Michigan State University – Broad College of Business

<http://www.bus.msu.edu/>

- **Entrepreneurship Education Overview.** Several entrepreneurship courses are offered although there is no formal concentration at either the undergraduate or graduate level. Experiential learning includes: Practicum for Emerging Markets and Consulting Practicum for Emerging Firms
- **Entrepreneurship Activities**
 - MBA Entrepreneurs Club offers hands-on projects, networking and business plan competitions.

Michigan Technological University – School of Business and Economics

<http://www.sbea.mtu.edu/sbe/home/>

- **Entrepreneurship Education Overview.** Several entrepreneurship courses are offered although there is no formal concentration at either the undergraduate or graduate level. Experiential learning includes: Entrepreneurial Case Study Project (sponsored by CenTILE) and the CenTILE Project.
- **Entrepreneurship Activities**
 - **Center for Technical Innovation and Leadership, and Entrepreneurship (CenTILE)** (<http://www.centile.mtu.edu/index.html>) resulted from a joint initiative by the School of Business and Economics, College of Engineering, and College of Sciences and Arts. CenTILE seeks to develop cooperative initiatives across

the campus aiming at advances in technological innovation, leadership, and entrepreneurship. The center supports course development, lecture series, workshops for entrepreneurs and small business managers, and the Entrepreneurs and Inventors Club.

- SmartCel Business Accelerator Program: Provides direct service to start-up firms in Houghton and in Rochester (in partnership with Oakland University).

Northern Michigan University – Cisler College of Business

<http://www.nmu.edu/departments/collcisler.htm>

- **Entrepreneurship Education Overview.** A Major in entrepreneurship is a hands-on, “how to do it,” practical approach to learning the business of running a business. Students learn the practical side of cash flow management, marketing for entrepreneurs, small business management, new venture finance, capital formation, and legal issues.

Oakland University – School of Business Administration

<http://www.sba.oakland.edu/>

- **Entrepreneurship Education Overview.** The MBA program offers a concentration in entrepreneurship with a special emphasis in Information Technology and International Business. There is also a post-master certificate program with a concentration in Entrepreneurship.
- **Entrepreneurship Activities**
 - Center for Entrepreneurship in Information Technology (CEIT)
 - Entrepreneurship Club: Students In Free Enterprise (SIFE)
 - Speaker Series
 - Michigan SMARTCEL: Technology Accelerator, funded in part by MEDC, is a joint project of Michigan Technological University and Oakland University in partnership with the Michigan Tech Enterprise SmartZone and participation from the Keweenaw Industrial Council and Automation Alley. SmartCel offers a spectrum of business, technology and venture solutions to clients and selected entrepreneurs. The “GeoSmart” strategy offers strategic connections to companies and entrepreneurs seeking the advantage of connections between Houghton and Oakland.

University of Michigan – Business School

<http://www.bus.umich.edu/>

- **Entrepreneurship Education Overview.** The graduate course offerings in entrepreneurship are extensive but the MBA at U-M is a general degree without specific concentrations. The Samuel Zell and Robert H. Lurie Institute for Entrepreneurial Studies supports an extremely broad range of entrepreneurship education opportunities in and outside the classroom (details below).
- **Entrepreneurship Activities**
 - Samuel Zell & Robert H. Lurie Institute for Entrepreneurial Studies (<http://www.zli.bus.umich.edu>) was established 1999 with a \$10 million endowment from founders Sam Zell and Ann Lurie. The Institute supports curriculum, symposia, business plan competitions, internships, entrepreneurial clubs and organizations, and alumni events that serve to provide a viable entrepreneurial network and engage the business community. Specific programs include:
 - Entrepalooza Symposium presents nationally recognized guest speakers and panelists speaking on entrepreneurial topics, including venture capital and angel funding; entrepreneurship in emerging economies; managing the growth of new ventures; and mergers and acquisitions.
 - Emerging Industries Symposium is a collaboration with a research arm of the University such as Life Sciences.
 - Wolverine Venture Fund (WVF): teams of Business School students, faculty and alumni manage this \$3 million fund, investing primarily in early-stage, emerging growth companies.
 - Dare to Dream Grant Program assists University of Michigan Business School student-created businesses that intend to begin or continue operations in Southeastern Michigan.
 - Marcel Gani Internship Program develops a market to bring together potential entrepreneurial employers and business school students seeking internships and provides funds to partially support the resulting internships.
 - Entrepreneurial Multidisciplinary Action Project (EMAP): MAP is a 7-week required core program that teams first-year MBAs with companies, offered in 3 areas: corporate, international, and entrepreneurial.
 - Pryor-Hale Business Plan Competition for BBA and MBA student teams.
 - Zell Lurie Institute also sponsors student teams at other business plan, venture capital, and case competitions.
 - Entrepreneurial Case Writing Program: for independent study credit or compensation
 - Entrepreneur and Venture Capital Club (<http://www.evc-club.com/>): for both graduate and undergraduate business school students
 - Michigan Entrepreneurs (<http://www.jwpc.com/ume>): interdisciplinary organization for both graduate and undergraduate students from throughout the University of Michigan.
 - Center for Venture Capital and Private Equity Finance (<http://www.umich.edu/~cvpumbs/>). The mission of the Center is to expand, leverage and disseminate its core knowledge of entrepreneurial finance, venture capital and private equity investment for the benefit of its constituent community. This community includes university students, alumni and staff, entrepreneurs, managers, and investors, as well as public policy makers whose decisions affect the environment for entrepreneurship and equity investment. The Center offers an annual Growth Capital symposium.

Business Plan Competitions

Overview

Many of the university-based entrepreneurship programs benchmarked above sponsor business plan competitions. Other competitions are affiliated with incubators, national or statewide economic development corporations, or with a business trying to sell a product. The business plan competitions listed here supplement those described earlier under each university entrepreneurship program. These extend beyond the boundaries of a single university and/or have other distinguishing characteristics.

Benchmarks

EnterPrize (Pittsburgh Business Plan Competition) attracts an average of 100 participating teams each year. The best and brightest entrepreneurs and experts in the entrepreneurial community are asked to help. Judges give invaluable feedback on the plan at every phase of the competition. A variety of educational workshops are also offered. The top plans in each category at the end of each phase win cash prizes, totaling \$112,000 in 2002.

<http://www.pghtech.org/Events/enterprize.asp>

Great Lakes Entrepreneur's Quest (GLEQ) is an "open" competition, i.e., not affiliated with a single university, agency, or corporation. GLEQ was formed in 2000 to encourage and educate entrepreneurs on the creation, start-up, and early growth stages of high-growth technology-based businesses within the state of Michigan. Combining workshops, coaching, networking, and real world feedback on business plans, GLEQ helps aspiring entrepreneurs grow their great ideas into great business models and, in turn, successful companies. Workshop training topics include: Market analysis, the right people, competitive analysis, product development and distribution paths, the pitch, legal issues, financial projections, financing options, strategizing and managing growth. The resources that GLEQ offers are: coaches, networking opportunities, feedback, and award monies. <http://www.gleq.org/>

The MIT \$50K Entrepreneurship Competition. Launched in 1990, this business plan competition is designed to encourage students and researchers in the MIT community to act on their talent, ideas and energy to produce tomorrow's leading firms. Now in its 14th year, the Competition has awarded hundreds of thousands of dollars in cash and business startup services to outstanding teams of student entrepreneurs who submitted business plans for new ventures showing significant business potential. The refinement process of the Competition, its network of mentors, investors and potential partners, and the cash prizes awarded have helped many of these teams to act on their dreams and build their own companies and fortunes.

<http://50k.mit.edu/about/index.php>

- **MIT \$50K Global Startup Workshop (GSW)** is the premier conference for business plan competition organizers. The GSW has allowed the MIT \$50K to develop the first global network of competitions, as well as to share expertise worldwide. Past GSWs have been co-hosted in Cambridge (USA), Singapore, Seville, and Melbourne. The Sixth Annual MIT \$50K Global Startup Workshop 2003 will take place in Beijing. <http://50k.mit.edu/gsw/2003/>

MOOT CORP® Competition is an international business plan competition and a centerpiece of the McCombs curriculum. The MOOT CORP® Competition has been called "the Super Bowl of world business plan competitions" (Business Week – 1993), "the mother of all business plan competitions" (Success – 1997) and "the granddaddy of them all" (Red Herring – 2000). The competition draws teams from MBA programs all over the world; the winner receives a \$100,000 investment to facilitate launching their venture. <http://www.businessplans.org/mootcorp.html>

Venture Fund Programs

Venture fund programs designed to invest in student ventures and/or to engage students in the investment decision process have been launched since the mid-1990s. Contained here is an overview of key points to consider before launching a venture program, the rationale for establishing one, and benchmarks of key programs. A venture capital competition and a stock/bond investment fund are also described.

Overview

- **Education is the primary goal:** The overriding reason to do an academic venture fund is to achieve educational benefits; all other goals are much less important and will be harder for the university to control.
- **Investment return is secondary:** While it is important to achieve solid investment return to demonstrate the quality of the program, significant learning also occurs as a result of failed or mediocre investments. University funds also will not always have access to the most promising investment opportunities, as discussed below.
- **A minimum three-year commitment is required:** It takes significant time to have sufficient experience to determine whether the program has meaningful benefits. At least two to three years is needed to achieve investments in a large enough portfolio of companies that a pattern of successful investment can begin to emerge. For each individual investment, an average of five years is needed for potentially successful investments to come to fruition. (Bad investments will be recognized earlier.) Overall, at least a three-year initial commitment is required to give the program a firm foundation.
- **Small scale (relative to professional venture capital firms):** Most academic venture funds are in the range of \$500,000 to \$3 million in total capitalization. Since the benefits of the program are realized through the investment decision process, and not through the amount invested in any one opportunity, average investments per firm should be kept small to mitigate risk.
- **Donated funds used for investment:** Venture investing is not a legal or appropriate use for public university funds. Capital donated to the university for the purpose of the venture fund is required.
- **Venture capital co-investors required:** Academic venture funds are small, have semester gaps, and do not have employ full-time investment professionals. Therefore, the best opportunities will usually come through venture capital partners with a commitment to the program. An active board of venture capitalists, willing to engage in the educational process, is needed.
- **Resource intensive:** Venture fund programs are resource intensive compared to traditional classroom teaching. The Fund Director needs to be actively engaged in sourcing, reviewing opportunities with students and assisting in the decision process, and developing and maintaining relationships with venture capitalists, with technology transfer colleagues, and with the larger entrepreneurial community. A traditional faculty member, i.e., one who is earning tenure or maintaining an intensive academic research program, will find this assignment overly time intensive compared with regular classroom responsibilities.
- **University-wide commitment needed:** Legal issues and potential conflicts of interest will arise. The appropriate university administrators need to understand and support the venture fund.

Rationale

- **A cornerstone entrepreneurship educational component; provides real-life, “hands-on,” integrative educational experience for students:** A comprehensive Entrepreneurship Program addresses the entire entrepreneurial start-up process, best conceptualized as consisting of five distinct, yet highly interrelated stages. The stages are as follows:

1. *Sourcing*
2. *Initial Screen: Technological Feasibility and Initial Market Feasibility*
3. *Business Plan: In-depth Market Feasibility, Strategy, Operational and Financial Planning*
4. *Financing/Resources*
5. *Start-Up/Early Growth*

A venture fund gives students the opportunity to experience all of the stages, while understanding the strong integration across them. The experience of students in any one stage, or in multiple stages, will be richer and more meaningful if imbedded in a program encompassing the entire process.

- **Facilitates university technology transfer:** Venture funds, in combination with business planning classes, create strong programmatic linkages between the university's technology transfer function and the business school. Key benefits for each are created: The students work on projects that are “cutting-edge” and representative of their university's best research, while the technology transfer is enabled by a focused effort by ambitious, bright business students and their faculty.
- **Demonstrates that universities can be entrepreneurial and risk-taking, as role model for entrepreneurial students:** Venture funds are outside the “normal” academic programs in business schools, and are difficult to manage and predict. For example, such issues as conflict of interest inevitably occur. Commitment to such a program sends a powerful message to students.
- **Creates competitive advantage among academic business programs:** Venture fund programs are extremely popular among students, even in this post “dot com” period, and are starting to appear as a cornerstone of major business programs. National competitions among university-based venture funds have recently evolved, with a higher number of universities qualified to compete.

Benchmarks

The following venture funds meet at least one of two criteria: 1) students make the investment decisions, and 2) funds are invested in student ventures.

Columbia University

- *The Eugene Lang Entrepreneurial Initiative Fund* was established in 1996 by an initial gift of \$1,000,000 from Eugene Lang, MS '40, Founder and Chairman Emeritus of REFAC Technology Development Corporation. Its objective is to foster an entrepreneurial environment at Columbia Business School by providing students who conceive qualified business initiatives with seed capital for carrying them out after graduation. It also seeks to provide the Business School with the opportunity to share in the success of funded

ventures through negotiated equity or other participation.
<http://www.qsb.columbia.edu/entprog/lang/index.htm>

Pennsylvania State University

- *Garber Venture Capital Center.* Providing MBA students with real-world experiences is at the heart of the Farrell Center, which also oversees the Garber Venture Capital Fund. The fund, established in 1999 thanks to a \$5 million commitment from Penn State Alumnus Dr. John Garber, and his wife Bette, brings reality to the teaching of entrepreneurship and venture capital by enabling MBA students to become actively involved in the process of equity investment and new ventures. Students examine current investment opportunities and decide whether to invest from the fund in a particular transaction. Interaction with external private equity groups provides an opportunity for students to experience the complexities and pressures of the volatile private equity sector. <http://www.smeal.psu.edu/fcfe/garber.html>

Purdue University

- *Student Managed Venture Fund (SMVF).* Purdue's New Ventures Laboratory (NVL), allows students to work on a variety of real-life business start-up cases. Among its programs is the creation of the SMVF. Under supervision of faculty and corporate experts, students will be carefully selected and allowed to participate in an interdisciplinary seminar addressing the issues of venture and other forms of capital. Students would learn about investing capital and then be allowed, after receiving approval and guidance, to make actual investments from the SMVF. <http://128.210.160.161/wps/portal/s.155/2445>

University of Kansas, Kansas State University, and Wichita State University.

- *The Rudd Family Entrepreneurial Fund.* The Fund is a not-for-profit private foundation, originated by Mr. Leslie Rudd. It runs a joint program for all three universities, developed to encourage entrepreneurial activity in Kansas by providing venture capital funds to qualifying college students throughout the state. This money is used to invest in students' entrepreneurial endeavors established and operated in the state of Kansas. The program fosters an educational environment among participating universities that will create future economic benefits to the State of Kansas. All profits will go back into the fund to be used for additional entrepreneurial-related activities. Each participating university – Wichita State University, Kansas State University, and the University of Kansas – designates a Faculty Advisor who is responsible for reviewing business concepts and assisting students with their business plan development. Each university solicits alumni mentors to act as advisors in the development process. In addition, the Rudd Foundation provides a full-time Program Director for the Fund. The role of the Program Director includes promoting the program throughout the state, acting as the liaison with all participating universities, mentoring the students preparing business plans, recommending viable business plans for funding consideration and coordinating all meetings and communications with the Fund's Board of Directors. Students selected for funding will receive seed capital up to \$250,000 to implement their business plans. Depending on the circumstances, the Fund may choose to take a debt or equity position in the business, or a combination of the two. The goal is to have the return on the Fund's investments in successful projects help replenish the Fund for future student ventures. <http://www.ruddfund.org/Fund/index.asp>

University of Michigan

- *Wolverine Venture Fund (WVF).* The WVF is a multi-million dollar venture capital fund operated directly out of the University of Michigan Business School's Samuel Zell and Robert H. Lurie Institute for Entrepreneurial Studies. The Fund's investments are made with the active involvement of MBA students, with the assistance of faculty and an eight-

member advisory board of professional venture capitalists and entrepreneurs. The WVF is the largest, most active University-based venture fund of its type in the country. The activities of the fund have been featured in numerous business publications, including *Business Week*. The WVF invests primarily in early stage, technology-oriented companies. It typically invests \$100,000 to \$200,000 in seed and first-stage funding rounds, in a syndicate with other venture capital funds and angel investors. The WVF prefers investments in companies that have a "Michigan affiliation," meaning these companies have a management team member who is a student, alumnus, or faculty member. <http://www.zli.bus.umich.edu/wvf/>

Competition

Venture Capital Investment Competition (VCIC®) is the nation's premiere strategy competition for venture-minded and entrepreneurial MBA students. This one-of-a-kind competition gives students from top business schools a real-world venture capitalist experience – student teams interact with real CEOs from real companies with real business plans. Unlike other competitions where teams lock themselves away to mull over theoretical or historical scenarios, the VCIC® experience exposes students to a variety of activities that ultimately must be integrated into a cohesive investment strategy to be pitched to real venture capitalists. Many students hail the VCIC® as the most valuable learning experience of their MBA careers. <http://www.vcic.unc.edu/>. Participating schools

- University of Texas at Austin McCombs School hosted VCIC during 2001 and 2002. <http://www.bus.utexas.edu/research/hkcenter/>

Stock and Bond Investment Fund

University of California – Los Angeles

Student Investment Fund (SIF). The UCLA SIF allows selected second year MBA candidates to invest real money in the stock and bond markets. Conducted under the auspices of the Price Center for Entrepreneurial Studies, the faculty-supervised group engages in all aspects of portfolio management, investment analysis, asset allocation, and trading strategies, as would a professional management team. Students are responsible for all administrative details of managing the fund (which currently exceeds \$1.7 million), and also arrange for guest speakers. <http://www.anderson.ucla.edu/research/esc/MBAs/MBASIF.html>

ENGINEERING SCHOOL ENTREPRENEURSHIP PROGRAMS

Components of a Comprehensive Engineering Entrepreneurship Program

Engineering School Entrepreneurship Programs are becoming increasingly prevalent as their value to students as a method of broadening both their educational perspectives and their career options is recognized. They vary widely on their comprehensiveness and components. The following components emerge as common:

- *Formal Structure: Institute or Center.* Similar to Business School programs, the strongest Engineering entrepreneurship programs have an officially designated Institute or Center structure, often with independent funding from private donors and other grant sources. Entrepreneurship is a concept that often attracts funding.
- *Joint Engineering/Business Program.* Integration with Business School courses is relatively common. Integration with additional Schools within the University sometimes occurs, most often with *Information Technology, Natural Science, Agriculture, and Health Sciences.*
- *Entrepreneurship Option, Certificate, or Minor.* Programs tend to offer students an opportunity to elect an option or minor in Entrepreneurship. The main elements of entrepreneurship are provided, with elective courses offered for subject depth.
- *Project Emphasis.* Many programs have a backbone (often multi-year) project rather than a capstone. These generally involve market feasibility assessment and business planning. Experiential, problem-based learning is often a central theme of these programs and these projects are developed within cross-discipline (e.g., Engineering, Business, IT) teams.
- *Internships.* Many programs have internship options in which students are placed in businesses, preferably start-ups.
- *Innovation Grants.* Several Schools offer grants aimed to reward and encourage innovative engineering work. MIT is a particularly strong example.
- *Co-curricular Activities.* Clubs, Boot Camps, Competitions for Seed funds, Speaker Series are often incorporated into Entrepreneurship Programs.

Engineering School Entrepreneurship Program Benchmarks

The following eleven programs were selected as they represent a range of both top national and regional universities similar to Michigan's universities and they have unique programs of interest. *Please note: some of these programs are based on a collaboration between Engineering and Business Schools, and at times, other Schools within the university are also included.* The programs, appearing alphabetically, are:

- Georgia Institute of Technology
- Johns Hopkins University
- Louisiana Tech University Engineering
- Massachusetts Institute of Technology (MIT) School of Engineering
- Pennsylvania State University College of Engineering
- Purdue University Engineering
- Stanford University School of Engineering
- University of California – Berkley

- University of Central Florida (UCF) Engineering
- University of Iowa
- University of Pennsylvania School of Engineering and Applied Science

Refer to *Appendix D* for curriculum and course descriptions for all universities described in this section.

Georgia Institute of Technology

<http://www.entrepreneurship.gatech.edu/>

- **Program for Engineering Entrepreneurship** is a collaboration between the DuPree College of Management, the College of Engineering, and the Woodruff School of Mechanical Engineering. The program's specific aims are to provide a formal graduate level curriculum leading to a Certificate in Engineering Entrepreneurship; to provide short courses on a variety of topics for faculty members, scientists, and engineers; to organize academic conferences on technology entrepreneurship; and to sponsor seminars consisting of high profile speakers who have made an impact on industry. This program is funded by a special opportunity award from the Whitaker Foundation and by the Lawrence P. Huang Chair in Engineering Entrepreneurship. Dr. David Ku, who holds the Huang Chair, is the Director of the program.
- **Whitaker Foundation Grant:** Terry Blum (Dean of the DuPree College of Management) and David Ku (Professor in Mechanical Engineering, a surgeon and a founder of a new company Restore Therapeutics) received a \$1 million grant from the Whitaker Foundation to develop a new curriculum that allows biomedical engineering students to minor in entrepreneurial management. It also provides for a series of executive courses for biomedical engineers and for conferences to shape and organize the intellectual space surrounding the multidisciplinary field. The first cohort was a modularized introduction to business, with a commercialization of biomedical technology course (to be offered next winter) along with two other newly designed classes and a choice of electives we already offer. To institutionalize the program and to facilitate commercialization of biomedical technology, two new faculty positions, one in management and one in biomedical engineering, will be recruited.

Johns Hopkins University

<http://www.wse.jhu.edu/>

- In 1999, in recognition of a gift from W.P. Carey, an expanded venture in the university's *Whiting School of Engineering* (<http://www.jhu.edu/~wse1/>) was called the **W. P. Carey Programs in Entrepreneurship and Management**. More than 300 students are taking classes added to the program after the gift, such as business law and corporate finance, said John Wierman, chairman of Applied Mathematics and Statistics and administrator of the entrepreneurship and management program. Other offerings include business ethics, fundamentals of leadership, the world economy, manufacturing processes and investments and portfolio management.
- **W. P. Carey Minor in Entrepreneurship & Management (Department of Mathematical Sciences)** program focuses on business and management from a multidisciplinary viewpoint, with a quantitative emphasis. The program offers students a diversified learning experience that emphasizes the concepts, practices, and skills necessary for effective leadership as managers and entrepreneurs in the private and public sectors. The primary goal of the program is to provide Hopkins students with the knowledge and skills to become leaders of technology companies. Individuals with

excellent technical training and abilities often move into management positions, or start new ventures. As their careers progress, they will be better prepared for success if they have the ability to understand financial reports, interpret statistical data, organize and effectively lead a team, analyze and correct problems in the firm's operations, and understand the dynamics of the marketplace. The minor is purposely designed to serve several types of students. This program will help prepare students for entrance into an MBA degree program or into law school. A second group is those who plan to start working in engineering or technical positions, then later move into management or start their own business. A third group of students are not necessarily planning business careers but are interested in gaining knowledge to follow their interests in investments and personal finance. <http://www.ams.jhu.edu/business/index.html>

- *Annual Johns Hopkins Business Plan Competition.* The W. P. Carey Program in Entrepreneurship & Management is announcing its fourth annual business plan competition. The competition was started to give Hopkins undergraduates an opportunity to use their technical knowledge and creativity to think about starting a business. We give students a chance to work with JHU alumni and entrepreneurs to get valuable advice and support while developing their business ideas and writing the business plans. Students may develop a new product or service or develop a product or service as an extension of an existing business.
- *Business Internship (551.500).* To assist students in gaining practical business experience, the W. P. Carey Program in Entrepreneurship & Management assists students in arranging internships for college credit. Prof. Wierman is able to serve as a faculty sponsor for a limited number of students each semester. For the fall and spring semesters, he can help students locate an appropriate corporation or firm for an internship. For summer semester, he will only serve as faculty sponsor for students who are accepted into an established internship program. Students who desire an internship must complete the application materials requested in this packet. Prof. Wierman will select students to sponsor for a given semester from among the applicants whose applications are received by the end of the previous semester. To receive the maximum benefit from an internship, students must be well prepared to perform the duties required by the corporation or firm. Interns should have completed a variety of courses in business, economics, mathematical sciences, and computing, and have a cumulative grade point average above 3.2. Preference will be given to juniors and seniors, since sophomores and freshmen will have more opportunities in the future.

Louisiana Tech University

<http://cenit.latech.edu/>

- **Center for Entrepreneurship and Information Technology (CEnIT):** Louisiana Governor Mike Foster, Jr. is developing a range of statewide initiatives to promote innovation and entrepreneurship in the State. Louisiana Tech in Ruston, LA is already getting a jumpstart on this effort with its Center for Entrepreneurship and Information Technology (CEnIT). Louisiana Tech University proposed that the College of Engineering and Science (COES) (<http://www.latech.edu/tech/engr>) and the College of Administration and Business (CAB) (<http://www.cab.latech.edu/public/index.htm>) establish an interdisciplinary center to focus the talents and resources of the two colleges and their related centers in advancing entrepreneurial research, education and technology transfer. The Center for Entrepreneurship and Information Technology (CEnIT) was created in the fall of 2001 in response to this state initiative. The mission of CEnIT is to create an innovative entrepreneurial culture by:

- Enhancing the education of students in Information Technology and Entrepreneurship
- Promoting the development and commercialization of information technologies generated by university faculty and students
- Providing leadership in Entrepreneurship and Information Technology outreach activities that will support economic development in the state
- *Association of Business, Engineering and Science Entrepreneurs (ABESE)*, a student-led networking group: through ABESE, students are building entrepreneurial teams of engineers, scientists, and business majors

Massachusetts Institute of Technology (MIT) School of Engineering

<http://web.mit.edu/deshpandecenter/>

- **Deshpande Center for Technological Innovation:** MIT has a long tradition of nurturing innovation, providing the technology for new companies, and of building successful relationships with larger corporations that fund research. But historically, obstacles remained in the innovation process, between initial concepts and commercialization. Unproven ideas had little opportunity to advance beyond their theoretical stages. And younger companies lacked ways to discover and fund new ideas. But today, the Deshpande Center is working to change all that, and connect MIT's innovators with the marketplace.
 - *Grant Program:* Over the next five years, the Deshpande Center plans to award approximately \$15 million in Ignition and Innovation Program Grants. This funding will enable faculty and their students to pursue exciting new avenues of research on novel technologies. It will also allow collaboration with individuals or organizations that might not otherwise have the opportunity to collaborate with MIT.
 - *MIT partnerships:* The Deshpande Center complements these existing resources, which include:
 - MIT Technology Licensing Office
 - MIT Venture Mentoring Service
 - MIT Entrepreneurship Center
 - MIT \$50K Entrepreneurship Competition
 - MIT Industrial Liaison Program
 - MIT Sloan School of Management
 - MIT Enterprise Forum®
 - *Workshops.* *Global Startup Workshop, 2003*, is an example of entrepreneurial workshops put on by the Center
- **The Lemelson-MIT Program** is dedicated to honoring the acclaimed and unsung heroes who have helped improve our lives through invention. The program inspires and encourages tomorrow's great inventors through various outreach programs, including rich educational materials and an innovative grant funded for school aged youth. The cornerstone of the Lemelson-MIT Program is a prestigious awards program that includes the \$500,000 Lemelson-MIT Prize, the world's largest single cash prize for invention. The Program was established in 1994 at the nation's premier technological university, the Massachusetts Institute of Technology, by one of the world's most prolific inventors, Jerome Lemelson (1923-1997), and his wife, Dorothy. It is funded by The Lemelson Foundation (<http://web.mit.edu/invent/w-foundation.html>) and administered by MIT's

School of Engineering. The goal of the Program is to raise the stature of inventors and to inspire invention and innovation among young people. Examples of the various outreach programs offered, including rich educational materials and innovative grants for school aged youth, are the following:

- *InvenTeam Grants* support a non-competitive, team-based approach to invention and innovation among high school students. Grants of up to \$10,000 are awarded annually to teams based on the inventiveness, ingenuity and feasibility of their project proposals. This initiative was developed as a logical evolution of the Program's High School Invention Apprenticeship, granted annually from 1998 through 2002. <http://web.mit.edu/invent/www/InvenTeam>
- *Handbook for Inventors* is the essential guide for independent inventors and entrepreneurs and includes information on protecting intellectual property, raising capital, applying for patents, and other steps to protect and commercialize your ideas. <http://web.mit.edu/invent/h-main.html>
- *Invention Index* is an annual survey that provides unprecedented insight into Americans' perceptions about inventing and innovating. Find out how American teens rate the TV and other useful facts. *Invention Assembly* will mark the 10th anniversary of The Lemelson Foundation and the Lemelson-MIT Program. Slated for late April 2004 in Washington, DC, this public forum will probe the sources of inventive ingenuity and its importance to society, and promote policy recommendations to foster an inventive culture. <http://web.mit.edu/invent/n-pressreleases/n-press-02index.html>
- **MITE²S (Minority Introduction to Engineering, Entrepreneurship, and Science)** is a rigorous six-week residential summer program that introduces promising minority high school juniors to engineering, science, and entrepreneurship. The program also stresses the value and rewards of pursuing technical degrees and careers. The program is 100% scholarship-based. Funding from industry, foundations, and individuals covers all living and educational expenses for each admitted student. Students only pay for their transportation to and from MIT. The MITE²S program is open to high school students who are US citizens or permanent residents and who are from one of the minority groups underrepresented in the engineering and science fields, namely, Native American, Hispanic American, and African American. <http://web.mit.edu/mites/www/>

Pennsylvania State University College of Engineering

<http://www.ecsel.psu.edu/e-ship/>

- **Engineering Entrepreneurship Minor:** In affiliation with Penn State's Leonhard Center. The College of Engineering, in cooperation with the Smeal College of Business Administration, is launching a new Engineering Entrepreneurship Minor. This interdisciplinary minor supports technology entrepreneurship development for all students, especially those majoring in engineering, business and IST (Information Sciences and Technology). To be involved in technology startups or to be "intrapreneurial" in existing corporation, engineering and IST students should have basic knowledge of business finance, marketing, and intellectual property law. Likewise, business students should have a working knowledge of the engineering design process, basic engineering principles, graphics, and computer-aided design. The E-SHIP Minor is structured to provide the needed "cross-training" to have IST, engineering and business students work effectively on product development teams. In addition, all students must develop solid skills in leadership, creativity and innovation in order to conceive, produce and promote creative product designs and solutions.

- *Problem-based Learning in Engineering Entrepreneurship*. A two-year project funded by the GE Learning Excellence Fund and the Leonhard Center. The proposed initiatives incorporate collaborative, problem-based learning in entrepreneurship throughout the undergraduate programs; they represent a critical step to meet the vision of "World-Class Engineering Education."

Purdue University

<http://128.210.160.161/wps/portal/> pagr/109

- **Burton D. Morgan Center for Entrepreneurship**, launched by a \$7 million gift from an alumnus of the Engineering School, nurtures the entrepreneurial spirit of Purdue faculty and students. It has a strong emphasis on fostering the links between Engineering and Business. The 31,000-square-foot building will be a two-story facility designed to connect to future adjacent buildings with overhead walkways; construction began at the end of 2002. Realizing the promises of science and technology by nurturing the spirit of discovery and enterprise in faculty and students. Burton D. Morgan Center for Entrepreneurship is the home of:
 - *The New Ventures Laboratory (NVL)* will allow students to work on a variety of real-life business start-up cases. The NVL will arrange and sponsor visits to campus from practicing entrepreneurs, venture capitalists, and other relevant experts. <http://128.210.160.161/wps/portal/.cmd/cs/.ce/155/.s/2445/> s.155/2445
 - *The Burton D. Morgan Entrepreneurial Competition*, in which engineering and management students work together to demonstrate their ideas for new products or services and show how they could be developed into profitable businesses. <http://128.210.160.161/wps/portal/.cmd/cs/.ce/155/.s/2444/> s.155/2444
 - *The Technology Transfer Initiative (TTi)* will research issues industry encounters when trying to license and market new technologies and products. It also will help faculty design courses to teach entrepreneurship. TTi is a multidisciplinary program developed by Purdue's School of Management in partnership with Purdue's schools of Science, Engineering, and Agriculture. TTi's mission is to serve as a catalyst in promoting educational activities and programs on innovation and technology transfer. Four key program elements support TTi's mission: <http://www.mgmt.purdue.edu/centers/tti/>
 - Research funding is provided on a competitive basis to faculty interested in the innovation process, factors leading to success or failures of new ventures, issues surrounding intellectual property rights, and other areas related to the commercialization of research or technically based product ideas
 - Competitive grants support curriculum development for faculty interested in developing courses in support of TTi's mission
 - The Innovation Realization Lab (IRL), is a NSF-funded program, spanning two years, that matches MBA students from the Krannert School of Management with doctoral students from Purdue's schools of Agriculture, Science, and Engineering in teams to analyze the commercial potential of the doctoral students' research: includes required courses taken by the teams
 - Business consulting services are provided to faculty groups working on new technologies and interested in exploring avenues for realizing commercial value from their research

- *The Purdue Engineering Projects in Community Service (EPICS)* is a program, in which undergraduates work with community service agencies to find ways to use technology to solve problems and improve services. <http://epics.ecn.purdue.edu/>
- *The Life Sciences Business Plan Competition* seeks commercial, viable business plan entries for innovative products and services in the life sciences industry such as medical equipment and devices, pharmaceuticals and drugs, research services, and software. <http://www.purdue.edu/discoverypark/lifesciencescompetition/>
- *Executive Forum Series*. Regular appearances of entrepreneurial executives are scheduled.

Stanford University School of Engineering

<http://stvp.stanford.edu/>

- **The Stanford Technology Ventures Program (STVP)** believes that engineers and scientists need entrepreneurial skills to be successful at all levels within their organizations. Their center is dedicated to accelerating high-technology entrepreneurship education and creating scholarly research on technology-based firms. They prepare students for leadership positions in industry, universities, and society, and disseminate research and teaching knowledge throughout the world. STVP (<http://stvp.stanford.edu>) is located within the Stanford University School of Engineering and is hosted by the Department of Management Science and Engineering. (<http://www.stanford.edu/dept/MSandE/>)
 - *The Mayfield Fellows Program (MFP)* is a nine-month work/study program at Stanford University designed to develop a theoretical and practical understanding of the techniques for growing emerging technology companies. The program combines an intense sequence of courses on the management of technology ventures, a paid summer internship at a start-up company, and ongoing mentoring and networking activities. It is a very comprehensive entrepreneurship education. MFP runs from April to December each year, and includes spring, summer, and autumn quarters. Enrollment is limited to a dozen outstanding Stanford undergraduate or co-terminal engineers and scientists. Students who accept admission to the program become Mayfield Fellows.
 - *DFJ Entrepreneurial Thought Leaders Program*. The Entrepreneurial Thought Leaders Program was created in 1997, to provide students with real-world experiences from the perspective of industry leaders. Every quarter, this series brings entrepreneurial leaders to speak, including world-class entrepreneurs, CEOs, investors and authors. (See Appendix D.)

University of California – Berkley

<http://mot.berkeley.edu/>

- **The Management of Technology (MOT) Program** was established in 1987 as a joint effort between the College of Engineering (<http://coe.berkeley.edu/>) and the Haas School of Business (<http://haas.berkeley.edu/>) at the University of California – Berkeley (<http://www.berkeley.edu/>). It is a research and teaching program that brings together faculty and students from both sides of campus to address critical technology management issues. An associated MOT Certificate program allows graduate students to specialize in the Management of Technology as they obtain their degrees. In 1999, the School of Information Management and Systems (<http://www.sims.berkeley.edu/>) joined

the program. The Management of Technology Program at UC Berkeley seeks to address a number of the technology management challenges. We define Management of Technology as the set of activities associated with bringing high technology products to the marketplace. MOT focuses on the operational and organizational issues associated with managing new product development and commercialization. These activities range from the strategic processes associated with investment in and development of technology capabilities inside and outside the firm, to the details of understanding customer needs, fabricating a prototype product or creating advertising copy.

University of Central Florida (UCF) Engineering

<http://www.regionalcampuses.ucf.edu/ksc/>

- **Engineering Entrepreneurship Certificate Program at KSC** is a three-course Certificate Program. Recognized by the National Collegiate Inventors and Innovators Alliance (NCIIA) as one of the most innovative, well-planned and effective technical entrepreneurship programs in the country. This program has been awarded grants exceeding \$30,000 to meet startup expenses for the Entrepreneurial Teams (E-Teams) in the course. Using the resources of UCF, the Central Florida Technology Incubator (<http://www.incubator.ucf.edu/>), TRDA Incubator and the networking, advice, insights and services from the professional quest speakers in course, some of the E-Teams have made significant progress in developing and commercializing their innovative products and technologies in the Spring 2002 term.
- **Engineering Entrepreneurship Colloquium on Commercialization of Innovative Technologies:** Successful entrepreneurs, intrapreneurs and technology incubator directors will talk on proven success strategies and entrepreneurship opportunities for commercializing innovative technologies. There will also be a demonstration of current Entrepreneurial Team projects for UCF's nationally recognized and funded Engineering Entrepreneurship certificate program.

University of Iowa

<http://www.iowajpec.org/>

- **The John Pappajohn Entrepreneurial Center (JPEC)** is the first of its kind to bring together the Colleges of Business, Engineering, Liberal Arts & Sciences and the Health Sciences (Medicine, Pharmacy, Dentistry and Nursing). The JPEC teaches University of Iowa students and Iowans of all ages how to turn their creative ideas into profitable businesses. The JPEC offers an undergraduate certificate in entrepreneurship to students in the Henry B. Tippie College of Business and the Colleges of Engineering, Liberal Arts & Sciences, and the Health Sciences. In addition, JPEC has partnered with the Iowa Community Colleges to train aspiring entrepreneurs across the entire state. The Pappajohn Center also offers entrepreneurial educational programs for Iowa elementary, middle and high school students. *History:* In 1987, the College of Business at The University of Iowa created the Entrepreneurial Management Institute to address the growing need for educating the next generation of Iowa entrepreneurs. The College launched the program with two undergraduate courses and one graduate course. Enrollment was initially limited to business students, and the program attracted approximately 200 students per year. In the early-to-mid 1990s, the entrepreneurship program expanded to include the Colleges of Health Sciences and Engineering. The vision provided by the respective Deans and University leaders lead to the creation of a unique program to teach entrepreneurship to students across these disciplines. Several new entrepreneurship courses were created and enrollments grew to almost 400 students per year. The Entrepreneurial Management Institute was renamed the John Pappajohn Entrepreneurial Center in 1996.

- *FastTrac Entrepreneurial Training Programs.* The JPEC is committed to increasing the entrepreneurial spirit across the state of Iowa. The JPEC has partnered with the 15 Iowa Community Colleges to deliver the FastTrac entrepreneurial training programs statewide. This initiative is designed to provide a wide range of learning experiences for individuals who wish to create a venture, learn the entrepreneurial process, or need to update their knowledge and skills to grow their businesses. This unique partnership allows JPEC to provide high quality instruction and support over the Iowa Communications Network (a statewide fiber optic network equipped for two-way audio and video transmissions) to entrepreneurs located throughout Iowa.
- *Student Consulting.* The JPEC believes in providing undergraduate and graduate students with real-world learning experiences through the entrepreneurship program. One course, Entrepreneurship: Business Consulting (<http://www.biz.uiowa.edu/entrep/undergraduates/Syllabus.doc>), provides students an opportunity to complete a consulting project for aspiring entrepreneurs and existing companies in eastern Iowa. This course has proven very beneficial for both the students and entrepreneurial firms. The course is open to advanced undergraduate and graduate students at the University of Iowa. The class typically includes students from the Colleges of Business, Engineering, Health Sciences, and Liberal Arts & Sciences. At the beginning of the semester, the students learn how to successfully complete a consulting project. Faculty with extensive experience in the consulting industry prepare students for the project including drafting the statement of work, conducting research, identifying recommendations and presenting their findings. After they have successfully completed the initial portion of the course, student teams will be formed, and projects will be assigned.
- *JPEC's Mentor Program* is designed to assist Eastern Iowa entrepreneurs successfully grow their business. Entrepreneurial firms that qualify can receive high quality business advice and counsel at no cost. The program has over 40 entrepreneurs, business professionals and faculty members ready to assist. Mentors are matched with entrepreneurs based on the experience and knowledge required to address the business challenge. The mentor will meet with the entrepreneur to discuss strategic options for solving current issues and growing the business. JPEC mentors work with startup and second stage companies, as well as, companies needing temporary management assistance, advice and help with reorganization, market plans, strategy development and implementation, funding, acquisitions and mergers. Some of our mentors can provide long-term assistance in the form of advisory board membership and other intensified assistance. To be eligible for this program, a company must be in operation and have prospects for significant revenue growth and job creation. By reason of JPEC's close ties to the technology centers at the University of Iowa, mentors are assigned to assist high tech companies requesting mentoring services whose background and experience relate to the technical field in which the company is engaged, in addition to their business background.
- *UI Entrepreneurs Association.* A student organization geared toward undergraduate and graduate students interested in entrepreneurship. The association's mission is to provide a forum to facilitate the development of entrepreneurial innovation and creativity through the exchange of ideas, experiences, and knowledge. The association is open to all students, faculty and staff of The University of Iowa. Activities:
 - Hosting luncheons each month featuring prominent entrepreneurs
 - Starting a business and venture capital fund for UI students
 - Partnering with Uptown Bill's Small Mall to provide mentoring/volunteer services

- Sponsoring Statewide CEO IOWA Conference
- *Pappajohn New Venture Business Plan Competition.* In September 2000, John Pappajohn created a statewide business plan competition to encourage and help Iowa college students pursue their interests in starting their own companies. Regional competitions are held at each of the John Pappajohn Entrepreneurial Centers in Iowa. Regional finalists present their plan to John Pappajohn and his staff at Equity Dynamics Inc.: three awards of \$5,000 each are awarded to the top teams.

University of Pennsylvania School of Engineering and Applied Science

<http://www.seas.upenn.edu/ent/>

- **Engineering Entrepreneurship Program:** Engineers and scientists around the globe launch high-tech companies to move their ideas to the market. Studies show that the majority of innovative products and services in our economy evolve from entrepreneurial ventures. By providing knowledge and skills important to the creation and leadership of such startups, the Program aims to train the founders and leaders of tomorrow's high-tech ventures. The Program is designed specifically for engineers and scientists. Courses are approached from the perspective of the student whose primary interest is in technological innovation, whose primary concentration is on engineering and science courses, and who has little or no prior business education. Designed specifically for engineers and scientists having a passion for technological innovation, these popular courses focus on the roles of inventors and founders in successful high-tech ventures.

MEDICAL SCHOOL ENTREPRENEURSHIP PROGRAMS

Universities with Medical Schools within the United States have traditionally emphasized research more than have non-medical universities; this research often leads to technology development and commercialization interest and potential. Universities with medical schools rank first with regard to total technology activity, followed closely by technological institutes (Goslin and Trune, 1996). Further, technologies related to medical care – including medical devices, biotechnology, proteomics, and genomics – represent some of the most promising technology sectors in our current economy. Thus, medical schools have a natural interest in entrepreneurship.

Medical School Entrepreneurship Program Benchmarks

The following five programs were selected as they represent a range of both top national and regional universities similar to Michigan's universities and with unique programs of interest. *Please note: some of these programs are based on a collaboration between Medical School and Business Schools, and at times, other Schools within the university are also included.* The programs, appearing alphabetically, are:

- Boston University
- Georgia Institute of Technology
- Karolinska Institutet
- Stanford University
- University of Pittsburgh Cancer Institute (UPCI)

Refer to *Appendix E* for curriculum and course descriptions for all universities described in this section.

Boston University

<http://www.bu.edu/hcep/about/index.html>

- **The Health Care Entrepreneurship Program (HCEP)** is a business development group established at Boston University in 1996. HCEP's mission is to initiate and support entrepreneurial business development in health care, focusing on the start-up phase. Market areas that HCEP focuses on include medical devices, information services, health services, and other types of health care technology (excluding biotech). HCEP's mission builds on the successful model of health care innovation created by the Health Policy Institute at Boston University. Founded by Dr. Richard Egdahl in 1975, the Institute led the industry in developing solutions for managing health care costs and quality. This work influenced corporate and government policy development and led to the founding of several information management companies. HCEP staff members have experience in medicine, early stage business development, venture capital, and health care management. In advising start-up companies, HCEP also draws on University experts and its broad network of outside advisors and contacts. Examples of ventures that HCEP have advised over the past several years:

Venture Type	HCEP Role
Wireless tracking of assets and people in hospitals	Advised CEO on sales, marketing, and funding strategies; introduced company to VC firms
Predictive modeling software that identifies high cost members for disease management initiatives in managed care organizations	Advised CEO on all aspects of business development; referred CEO to potential clients and investors
New technology for medical waste management	Assisted with market research and identifying sales and financing opportunities

EMS software to link hospitals and automate record-keeping for EMS	Critiqued business proposal; provided market analysis and contacts for beta testing
Web-based medical/legal information and consulting services	Provided pre-business plan advising services
Online continuing education for physicians	Provided market analysis and business development advice
Online services for home-based long term care providers	Advised on product and market development and funding strategies
New employee-managed health benefit products	Critiqued business model and marketing strategies
Web-based discharge planning and placement tool for hospitals and nursing homes	Provided business advice and referral to angel investors

- **The Boston University Initiative for Technology Entrepreneurship:** As one of the nation's premier research universities, Boston University is committed to making its considerable resources available to companies and entrepreneurs with emerging growth opportunities.
 - *BioSquare* is Boston's preeminent biomedical research and business address. It allows outstanding biomedical research companies and businesses the opportunity to work in tandem with leading principal investigators in their fields from the Boston University Schools of Medicine, Dental Medicine and Public Health. <http://www.biosquare.org/>
 - *The Photonics Center* is an incubator where companies can develop, and commercialize Photonics technologies by accessing equipment, laboratory facilities, and technical expertise, thus leveraging the vast technical assets of the Center and Boston University to augment their company's capabilities. The Center and Beacon Photonics, a holding company that creates vertically focused venture capital development companies (VCDs) have developed a program that focuses and accelerates the development and commercialization of advanced Photonics technologies and products by bringing together the best ideas, both from within and outside the University, and combining them with the expertise and resources of the University and the business community. Whereas traditional incubators or venture funds provide start-ups solely with space and capital, this unique program affords portfolio companies access to all of the tools necessary to accelerate their time to market. <http://www.thephotonicscenter.com/>
 - *Community Technology Fund (CTF)* provides venture capital and access to Boston University's scientific and technical resources for growing businesses. Boston University, through CTF, was one of the first universities to develop a focused venture capital and technology transfer program. CTF began investing in 1975 and has held equity positions in over 170 companies in the United States, through direct investments in venture deals and as a limited partner in Venture Funds. CTF also manages the Technology Transfer Program at Boston University and helps the University's faculty and staff identify, protect, and license promising intellectual property that results from research conducted at the two campuses and at Boston Medical Center. The University's particular strengths in the fields of medicine, engineering, computer science and photonics enable BU to be the source of numerous technologies. The Office of Technology Transfer, part of CTF, receives disclosures for approximately 80 new technologies a year. <http://www.bu.edu/ctf/>
 - *The Entrepreneurial Management Institute* at the School of Management sponsors research and develops curriculum in Entrepreneurship and provides a number of programs and activities for students and alumni entrepreneurs. Through the Bronner Center, EMI helps students develop a successful business

plan and links them to the leading venture capital sources in the Boston area.
<http://management.bu.edu/research/emi/>

- *The Fraunhofer USA Center for Manufacturing Innovation (FhCMI)*, which provides manufacturing solutions to local and international industry in three areas: Automation Technology, Manufacturing Systems Design, Machining Technologies <http://www.fhcmi.org/>

Georgia Institute of Technology

<http://www.isye.gatech.edu/~evakylee/medcalor/>

- While the *Georgia Institute of Technology* does not have a medical school, it has many affiliations with *Emory University School of Medicine*. Jointly they sponsor the **Center for Operations Research in Medicine** within the Industrial and Systems Engineering Department. They also jointly sponsor the Wallace H. Coulter Department of Biomedical Engineering:
 - *Biomedical Engineering, Program For Engineering Entrepreneurship*, included here because of the biomedical emphasis, is a collaboration between the DuPree College of Management, the College of Engineering, and the Woodruff School of Mechanical Engineering. The program's specific aims are to provide a formal graduate level curriculum leading to a Certificate in Engineering Entrepreneurship
 - *Whitaker Foundation Grant*. Terry Blum (Dean of the DuPree College of Management) and David Ku (Professor in Mechanical Engineering, a surgeon and a founder of a new company Restore Therapeutics) received a \$1 million grant from the Whitaker Foundation to develop a new curriculum that allows biomedical engineering students to minor in entrepreneurial management. It also provides for a series of executive courses for biomedical engineers and for conferences to shape and organize the intellectual space surrounding the multidisciplinary field. The first cohort was a modularized introduction to business, with a commercialization of biomedical technology course (to be offered next winter) along with 2 other newly designed classes and a choice of electives we already offer. To institutionalize the program and to facilitate commercialization of biomedical technology, two new faculty positions, one in management and one in biomedical engineering, will be recruited.
 - *Wallace H. Coulter Award for Innovation and Entrepreneurship*. Selected from more than 50 research abstracts worldwide, faculty members' work is recognized for its excellent science, innovation, and potential broad patient impact.

Karolinska Institutet

<http://www.sses.se/public/frameset.asp>

- **Karolinska Institutet** is one of Europe's largest medical universities and is Sweden's largest center for medical training and research, accounting for 30% of the medical training and 40% of the medical academic research that is conducted nationwide. Its mission is to improve the health of mankind through research, education, and information.
- Stockholm School of Entrepreneurship (SSES) (<http://www.sses.se/public/frameset.asp>) is an entrepreneurship school that is a joint venture between Karolinska Institutet, Royal

Institute of Technology, Stockholm School of Economics, and the University College of Arts, Crafts and Design, the leading universities in Technology, Economics, Medicine and Design in Stockholm. SSES has as its basic mission the development of Stockholm as one of the leading innovative and entrepreneurial centers in the world. The overall purpose of SSES is thus to support the development of Stockholm as an economic region for business creation, through scientific research, academic and practitioner education and business creation activities in close collaboration with universities, the business community and public agencies. SSES could be seen as a response to the demand for a more active role for institutions of higher education in industrial and social development (the triple helix model). Actually, the very foundation of SSES is based on the three core values underlying all of their activities.

- *Business Creation.* SSES is responsible for the support, development and coordination of the Business Creation activities in the member schools. This includes the creation of better conditions and opportunities for identifying business opportunities, formulating business plans and starting new companies related to the schools educational and research activities. It also includes the involvement of the schools in the joint development of an international competitive knowledge/science-based innovation system in the Stockholm region. Thus, the SSES Business Lab initiative is targeted at increasing the amount of science-based start-ups in the region as well as building a training- and support-structure that will enable the entrepreneurs to join forces with complementary disciplines, experiences and mentor structure in order to start and develop leading-edge science-based ventures.
- *Resource and content provider.* Through academic training programs, SSES provides an important part of the deal flow of business ideas and start-up's to the Business Labs and Incubator environments connected to the member schools. SSES Business Creation also provides basic and advanced training modules to the business labs, and pools entrepreneurial resources from various science and competence areas to be used as coaches and counselors in order to create more, safer and faster start-ups.
- *Coordination.* SSES sees as its task to actively contribute to the creation of an internationally competitive science-based innovation region in the Stockholm area. This includes an intensified collaboration with a number of schools and universities, funders – public as well as private, public resources and support networks, as well as innovation environments in big business as well as in Small and Medium sized Enterprises.
- *Financing.* Academic seed-funding, is not very well developed in Scandinavia, and SSES is actively involved in mobilizing venture capital providers to be able to help as many start-ups as possible.
- *Stockholm Practitioner Program (SPP).* The Practitioner Program experience at SSES is designed to take participants away from their day-to-day environments and to use our central pedagogic tenets of diversity, action and imagination to stimulate the exploration of new concepts. In order to achieve their teaching objectives, faculty members use multiple learning techniques including the use of lectures, guest speakers, group discussions, team based coaching and special exercises. Peer-group interaction is one of the unique strengths that SSES courses offer. Participants from the leading tertiary institutions in Sweden, with specialist backgrounds in engineering, the health sciences, business studies, and art craft and design are gathered in our classes. The result is that the participants in our courses contribute a rich and diverse pool of knowledge. Through the production of group projects and classroom discussion a dynamic interchange of perspectives stimulates new ways of thinking and provokes participants to challenge their preconceptions. The focus on action-oriented learning helps

participants equip themselves to achieve the ultimate goal of being able to directly apply their newfound perspective, knowledge, skills and strategies within their respective work environments.

Stanford University

<http://biodesign.stanford.edu/>

- **The Biodesign Network (BDN)** is a continuation and expansion of the Medical Device Network (MDN), which was founded in 1997. It explicitly focuses on technology transfer, providing education, advocacy and mentoring to students and faculty who wish to bring their innovations forward through the university to be developed into commercialized healthcare products. BDN also provides connections to the professional communities that specialize in biomedical technology, such as investors (angel, venture capital and institutional), med tech equipment manufacturers, and attorneys who specialize in intellectual property and new venture formation. With a member base of nearly 900 academic and industry participants, the Biodesign Network website provides a mechanism for networking among individuals who work in the biomedical technology industry, particularly medical devices, diagnostics, tissue engineering and related areas. The goals of the network are:
 - To encourage and facilitate invention, patenting and early-stage development of medical devices
 - To develop Stanford as an effective regional resource for research and education in the area of biomedical technology design and development

MDN sponsors a number of conferences for the device community and helps organize a series of courses in medical device design and development. In the area of technology innovation MDN has developed a successful "Invention Challenge" methodology at Stanford and conducts a mentorship program for young inventors. MDN works with the Office of Technology Licensing to develop effective evaluation and licensing strategies and has established important connections with the local financial and biomedical technology industries.

- **The Stanford University Program in Biodesign** is a unique academic program focused on the invention and implementation of new health technologies through interdisciplinary research and education at the emerging frontiers of engineering and the biomedical sciences. The program is organized administratively into four major units, (technology transfer/network, research, education and ethics & policy), each with a director and leadership group. Three key features are at the heart of the program:
 - Biodesign focuses on the invention and early testing of technologies that are directly targeted at clinical and healthcare needs
 - The program is explicitly interdisciplinary, with faculty and students from multiple departments in the schools of engineering, humanities & sciences and medicine
 - The primary educational goal of the program is to provide interdisciplinary training for students in areas that are now considered basic research domains, e.g., nanotechnology, and cellular and molecular biology

- **Stanford Biomedical Technology Innovation Program**

http://innovation.stanford.edu/jsp/index_flash.jsp

Stanford is recognized internationally as the birthplace of a number of major innovations in medical technology. In the past 25 years there have been over 50 Stanford faculty

members who have developed devices or procedures that have become important clinical tools. In association with the high level of innovation and development activity at Stanford, the San Francisco Bay Area has emerged as the premier region for new device development in the country. In the past 15 years, over 70% of the successful medical device start-up companies have been located in the Bay Area. Linked to this activity, major laboratories for pre-clinical and clinical device testing have been established at Stanford. The biomedical technology innovation program is a unique course and project experience designed to provide the knowledge and skills essential for the early development of new biomedical technologies. The program will enhance participants' abilities to identify new opportunities for innovation, to assess clinical needs and market potential and to take the critical first steps in the invention, patenting, early prototyping, and development of new concepts.

- *Program Pathways:* There are two main ways students can become involved in the Innovation Program: The *Fellowship Track* and the *Elective Track*. The Fellowship Track is a full-time, team-oriented immersive experience that combines hands-on innovation work with teaching responsibilities. The Elective Track is a series of 3-unit classes (Winter and Spring Terms) that are sequenced with the Fellows' innovation process. Both Fellows and elective students will attend these classes.
- *Innovator's Workshop.* The Stanford Biodesign Innovation Program, in cooperation with Windhover Information, Wilson Sonsini Goodrich & Rosati and PriceWaterhouseCoopers presents a unique opportunity to hear extraordinary inventors discuss the process of taking a medical device from concept to the market.
http://innovation.stanford.edu/html/news_and_events/workbench_info_web.htm

University of Pittsburgh Cancer Institute (UPCI)

<http://www.upci.upmc.edu/internet/lec/>

- **The Limbach Entrepreneurial Center** will promote medical entrepreneurial knowledge and activities among UPCI faculty and students through education and resource support. Initial funding for the center has been provided by a grant from Scott Limbach. Educational activities of the Limbach Center will include a lecture series featuring successful medical entrepreneurs, seminars on business issues related to entrepreneurship and a possible degree program on medical entrepreneurship. Support functions of the center will include providing "pre-seed" funding for projects with commercial potential and advice on business management issues. Ronald B. Herberman, UPCI director, said, "The Limbach Center will be a valuable asset in assisting our faculty and researchers in becoming more involved in taking important ideas from the laboratory to the marketplace. After the center begins to achieve this goal related to cancer research, we envision that it will be broadened to encompass a much wider range of opportunities across the Schools of the Health Sciences at the University of Pittsburgh."

SCIENCE ENTREPRENEURSHIP PROGRAMS

A relatively recent trend in entrepreneurial education is programs directed at science students. Case Western has been a pioneer of Science Entrepreneurship programs, launching with its Physics Entrepreneurship program, with first graduates in May 2002. They subsequently launched a program in Statistics Entrepreneurship in Fall 2002 and additional programs in Biology, Chemistry, and Mathematics are starting in Fall 2003. Georgia Tech launched a Science Entrepreneurship program in 2002. A longer-standing program exists Carthage College, launched in 1995 with the impetus provided by an alumnus and donor with a science-based entrepreneurship background.

Overview

- *Programs are small.* Universities need to be prepared that a program in Science Entrepreneurship will likely be small-scale and specialized, and that it might not break even initially. For example, CWRU launched its Physics Entrepreneurship program with five students; the Statistics Entrepreneurship program launched with four. They expect to grow to 85 students entering by the year 2008 across the five science entrepreneurship programs, so approximately 17 students per program on average. Georgia Tech's program launched with 25 students. Carthage College's senior project involving a detailed business plan enrolls 5-12 students per year.
- *Undergraduate, Masters, and PhD. level programs.* There is variety across programs with regard to their educational level. CWRU's program is aimed at the Master's level; Georgia Tech has a PhD focus. USF's program at the Institute for Excellence in Life Sciences Entrepreneurship is at the undergraduate, graduate, and post-graduate levels. Carthage College is aimed solely at undergraduates.
- *Flexible course content in technical discipline.* Programs aimed at graduate and post-graduate students attempt to be flexible in the technical discipline content of the programs to tailor to the specific interests of the student. CWRU created a couple new physics and biology courses for the Entrepreneurship program that combined science and entrepreneurship. While flexibility is useful to achieve the goals of the students, it also creates resource demands on the university.
- *Projects are a critical component.* Intensive projects with technical content in an entrepreneurial context are often core to these programs. For example, CWRU students earn 9 credits out of a required 27 for a master's thesis for the project. Carthage College students with an entrepreneurship minor have a major thesis involving a business plan, conducted by students individually.
- *Science Entrepreneurship projects appear to be successful.* CWRU found that two of the three finalists in the 2002 Business Plan competition in the Business School were from the Physics Entrepreneurship program. One of these projects resulted in a medical device start-up that has so far received \$700,000 in initial funding. *Technology Transfer Linkages.* These programs often develop strong relationships with their technology transfer office. One of the key goals of USF's Institute for Excellence in Life Sciences Entrepreneurship, for example, is enhancing technology transfer from the University to the private sector. CWRU is developing linkages with its university's emerging technology transfer function.
- *Pre-seed and Seed Venture Funds linkages.* Universities should think about a proactive approach to providing investment capital to start-ups arising from these programs. CWRU, for example, helped launch a pre-seed fund called Fast Start and has other linkages with local venture capital firms.

- *Linkages with incubator-based and other start-ups.* Hands-on experience working with high tech companies is often an important component. Tulsa University's program, for example, has linkages with the Oklahoma Technology Commercialization Center (OTCC). The University of South Florida works closely with the USF Technology Incubator. Carthage College's entrepreneurial science students are working with the CATI incubator program start-ups. Current involvement is on business planning; plans to expand the program to internships in the students' junior year are underway. Similarly, CWRU is expanding its program relationships with the University's Enterprise Development incubator, with a NASA incubator, and an emerging incubator involving Cleveland Clinic.
- *Business School integration and cross-fertilization.* Science Entrepreneurship students frequently take entrepreneurship courses with MBA students for cross-fertilization of knowledge within project teams. Business school faculty members also serve as advisors on projects. USF's Institute for Excellence in Life Sciences Entrepreneurship, for example, is a partnership with its Center for Entrepreneurship in the Business School. CWRU would not have launched its program without the solid support of its Business School.
- *Foundation funding available.* Given the small size of these programs, external funding is particularly important. The Sloan Foundation and the Coleman Foundation/U.S. Association of Small Business and Entrepreneurship (USASBE) provided funding to CWRU. USF's Institute for Excellence in Life Sciences Entrepreneurship is partially funded by the Kauffman Foundation. Georgia Tech's TI:GER program was funded by a \$2.9 million National Science Foundation's Integrative Graduate Education in Research Training (NSF-IGERT) grant. CWRU and the University of Tennessee at Martin have also received program funding through the NCIIA Advanced E-Team grants.
- *Endowment funding available.* As is true for entrepreneurship programs in general, Science entrepreneurship programs are attractive for endowment funding. For example, CWRU has raised \$1.6 million in endowment funding for the ongoing support of the Physics Entrepreneurship program, in addition to Foundation funding.
- *Boot Camps.* To familiarize science students with business, some programs are developing a business curriculum conducted in boot camps during the summer prior to their program start. Offered by CWRU, Georgia Tech, University of Maryland, and others.
- *Networks.* Linking students with the larger entrepreneurial community is another key feature of these programs. CWRU, for example, has regular seminar series featuring local entrepreneurs, venture capitalists, angels, scientists, and other service providers.
- *Alumni Interest.* Science graduates become entrepreneurs with some frequency, depending on the University's location and technology expertise and reputation. Such alumni tend to be very supportive of Science Entrepreneurship programs, and are frequently involved as mentors, internship providers, board members and donors. For example, both CWRU and Carthage College launched their programs at the suggestion of and donation from a science entrepreneur alumnus.

Science Entrepreneurship Program Benchmarks

Programs devoted to science entrepreneurship are less common than those attached to business or engineering programs but they are growing in number. The following programs were chosen as an interesting cross-section of this emerging trend in entrepreneurship education. They are listed in alphabetical order:

- Carthage College
- Case Western Reserve University
- Georgia Institute of Technology (in affiliation with Emory University)
- Interdisciplinary Center Herzliya (IDC) (Israel)
- NOAA Educational Partnership Program with Minority Serving Institutions (U.S. Department of Education)
- Syracuse University
- Tulsa University
- University of South Florida
- University of Tennessee at Martin

Carthage College

<http://www2.carthage.edu/departments/esns/>

- *ScienceWorks Technology Entrepreneurship Program, and Entrepreneurial Studies in the Natural Sciences (ESNS).* ScienceWorks students are majors in biology, chemistry, physics, mathematics or computer science. Their business preparation includes a variety of business and entrepreneurship courses. Students also have the option to become involved in hands-on projects in the Center for Advanced Technology and Innovation (CATI), an innovative incubator program.
- *Entrepreneurial Studies in the Natural Sciences (ESNS) Program.* ESNS is a unique offering. It provides the opportunity to develop skills and opportunities in the business and professional world and is a complement to liberal arts studies. The ESNS Program is based on a one-year course sequence normally taken during the junior year, covering all of the aspects of technology business. The summer following the junior year is devoted to a hands-on internship experience, while the senior year includes a detailed technology business project. This mixture of project work, hands-on experience, and preparatory course work provides the best preparation before entering a career, and results in a product that the student can use to show his/her capabilities. The course work emphasizes integration of important skills, such as written and oral communication, graphics and artwork, business accounting, management, and marketing, with the important aspects of legal issues, regulation, and intellectual property. In addition the course covers the characteristics of all types of technology businesses. The courses are taught by many different Carthage faculty members, and include outside speakers from many specialty areas, including local and national business leaders.

Case Western Reserve University

<http://sep.cwru.edu/>

- *Science Entrepreneurship Program.* This Masters Programs offered through the Case Western Reserve University Weatherhead School of Management (http://weatherhead.cwru.edu/ENTP/program/sci_entp.htm) afford more than top-level academic instruction. They connect students with the business executives and leaders, experts, and venture capitalists who are crucial to success in start-up and growing ventures. The programs provide training and real-world experience to students who have a background in science and a vision for new and growing ventures. The goal: scientists

who are empowered as entrepreneurs, and who have the skills to start new high-tech businesses and grow them successfully. The two-year Science Entrepreneurship Programs include a master's thesis and courses in one of the departments and courses in the Weatherhead School of Management at CWRU. Each student is paired with a mentor from one of the participating science departments who acts as an academic advisor as well as a long-term scientific resource. A member of the Weatherhead faculty likewise serves each student as a business management resource. The scheduling of courses is flexible. Programs available in the following departments

- Biology
- Chemistry
- Mathematics
- Physics
- Statistics

Georgia Institute of Technology (in affiliation with Emory University)

http://www.dupree.gatech.edu/fac_research/centers_initiatives/tiger.html

- *Technological Innovation: Generating Economic Results (TI:GER)*. A new program at the Georgia Institute of Technology and Emory University brings Ph.D. students in Science and Engineering together with Georgia Tech MBA students and Emory law students to participate in a curriculum on the technical, legal, and business issues involved with moving fundamental research to the marketplace. The program is designed to address two critical components of the technology commercialization process: 1) the development of a professional workforce with the skills and capabilities necessary to facilitate innovation, and 2) the development of a body of knowledge unique to the innovation and commercialization process. The overriding goal of the program is the development of technically proficient students with the skills necessary for success as academics, entrepreneurs in small companies, or intrapreneurs in the corporate world. The program is multidisciplinary, drawing students and faculty from the **sciences, management, law, and economics**. The science and engineering disciplines currently involved include: Biomedical Engineering, Tissue Engineering, Microelectronics, Packaging, and Microelectromagnetic Systems. Training occurs in multidisciplinary teams. Central to the program, are team projects in which students consider potential market applications of the Ph.D. students' research. The teams are formed at the beginning of the MBA students' program, and teams are required by the end of the MBA to have completed a detailed commercialization plan that is the focus of the science and engineering students' research.

Interdisciplinary Center Herzliya (IDC) (Israel)

<http://www.idc.ac.il/eng/content/csprog.asp>

- *The Efi Arazi School of Computer Science*. Students begin their education with a series of introductory mathematics and computer science courses, with special emphasis on the Java programming language. Second year courses focus on the core of the field: algorithms, digital architectures, operating systems, software engineering, database management, communications and networks. During this year, students develop programming skills in C++, Visual Basic, and Scheme. The third and final year of studies focuses on advanced courses in such areas as computational models and distributed systems. In addition, the students form project teams that develop industrial-strength systems, under the academic supervision of our faculty and the sponsorship of some 50 Israeli high technology companies. Furthermore, the program features a minor in business administration, consisting of courses in economics, finance, marketing, accounting, communications skills, and entrepreneurship. As the program's structure

reflects, the goal is not limited to preparing programmers and software developers; graduates are prepared to take the fast track and grow quickly into product management and technology leadership positions.

NOAA Educational Partnership Program with Minority Serving Institutions (U.S. Department of Education)

<http://epp.noaa.gov/programs/?ID=3>

- *The Environmental Entrepreneurship Program (EEP)* provides funding to eligible Minority Serving Institutions (MSIs) to attract under represented students to pursue advanced academic study and entrepreneurship opportunities in the NOAA-related environmental fields. The program will train, mentor, and retain students in the atmospheric, oceanic, and environmental sciences. Funds are disbursed on an annual basis through a competitive process. The program facilitates partnerships between MSIs, NOAA, and the Department of Commerce. Relationships are formed with academic, research, government, and non-governmental organizations (NGOs) aimed at preparing students with the necessary knowledge, skills, tools, and technology to foster environmentally sustainable and economically viable local communities and careers.

Syracuse University

<http://sominfo.syr.edu/eee/>

- **Program in Entrepreneurship and Emerging Enterprises** at the Martin J. School of Management. Minor in Entrepreneurship is aimed at students, particularly those in majors outside the School of Management, as a complement to their major area. The minor is intended to help students bring an entrepreneurial perspective to their major field of study, ranging from the arts and sciences, engineering, and education, to the health professions, communications, and the visual and performing arts. Students pursuing the Entrepreneur Minor must complete Introduction to Entrepreneurship, three elective courses in entrepreneurship, Introduction to Financial Accounting, and Finance for Non-business Students. This program has a continuing relationship with the *Center for Advanced Technology in Computer Applications and Software Engineering (CASE)*. The objective of the program, led by Gary Lim, is to develop within students the business savvy to carry ideas and dreams as high and as far as the students wish to take them. Students develop the knowledge needed to transform ideas and emerging organizations into prospering enterprises, the astuteness to anticipate opportunity and minimize risk, and the wherewithal to maintain a clear vision. The vision of Syracuse University's Program in Entrepreneurship and Emerging Enterprises is to forge a synergy between educational excellence and entrepreneurial ingenuity. Students gain the knowledge and skills to nurture a startup, manage a family business, revitalize an established business, or shepherd hybrid economic organizations-alliances, joint ventures, partnerships, or "virtual corporations."

Tulsa University

<http://www.utulsa.edu/fyi/index.pl?group=2&bullet=2>

- *Tulsa University Innovation Institute (TUI2) Certificate Program in Innovation and Product Development* provides a unique interdisciplinary forum where **engineering, business, arts and sciences, and law** students come together to study and develop comprehensive plans for marketable technology-based products. Students also collaborate with the Oklahoma Technology Commercialization Center (OTCC) to analyze actual business plans submitted by aspiring entrepreneurs.

University of South Florida

<http://www.entrepreneurship.usf.edu/>

- The **Center for Entrepreneurship** is a multi-disciplinary, campus-wide center focusing on entrepreneurial education, training and research. The vision of the USF Center for Entrepreneurship is to create an internationally recognized Center of Excellence for educating and training entrepreneurial leaders using innovative, interdisciplinary approaches. The Center seeks to create unique learning opportunities through partnerships among students, faculty and community entrepreneurial leaders. These partnerships leverage the strengths of all participants to create a nationally recognized program which enables students, faculty and entrepreneurial leaders to develop the critical skills necessary to (1) identify new opportunities (2) accelerate the commercialization of new technologies and (3) create and grow successful new business ventures.
- The **Institute for Excellence in Life Sciences Entrepreneurship** is a partnership between the University of South Florida's Center for Entrepreneurship and the Ewing Marion Kauffman Foundation (<http://www.emkf.org/>). The Institute maintains an active research program that explores the underlying success factors which drive the creation, growth and failures of the Life Sciences Industry.
http://www.entrepreneurship.usf.edu/ce_InstExcellenceLifeScience.html

University of Tennessee at Martin

<http://www.utm.edu/departments/soba/mmmps/mmmps.html>

- *The Entrepreneurship Program.* The College of Business and Public Affairs offers a multidisciplinary program for students who wish to study entrepreneurship. Courses emphasize innovation and invention, and the integration of students from other schools offers realism and technical knowledge from the other disciplines. Students from any major who is sincerely interested working on a project to bring a product or service to market are potential students. Each major in the University has technical knowledge to add to the general knowledge base of the class, whether this knowledge be in education, electronics, science, nursing, agriculture or any other discipline. The current curriculum consists of:
 - A concentration in entrepreneurship within the management major
 - A certificate of entrepreneurship, primarily for technical majors such as engineering or
 - A minor in entrepreneurship, offered for arts and science majors

The courses in this curriculum utilize team based class assignments to encourage students to develop their innovative and creative capabilities. These teams work on projects of their own choosing. Faculty from various schools are involved in teaching and advising students. Teams that include non-business and business students develop each project around a team concept referred to as an E-Team. The "E" is for "Excellence and Entrepreneurship." The overall objectives of the program for student teams are to:

- Educate university students from business and non-business in innovation and invention within existing businesses and in startup business situations,
- Develop entrepreneurial and intrapreneurial (entrepreneurial efforts within existing organizations) skills and techniques necessary to recognize problems, and develop and carry out realistic solutions to those problems, and
- Discover and understand what does and does not work in today's global competitive marketplace.

This program is a two-year study beginning in the students' junior year. There are no course prerequisites, but junior standing is strongly suggested. The program would ideally have equal numbers of non-business and business students.

This concept was championed by the National Collegiate Inventors and Innovators Alliance (<http://www.nciia.org/>), which is based at Hampshire College (<http://www.hampshire.edu/>) in Amherst, MA. Considerable advice and knowledge is drawn from this Hampshire College and the University of Southern California Entrepreneur Program (<http://www.usc.edu/dept/buad/entrepreneur/info/courses.html>).